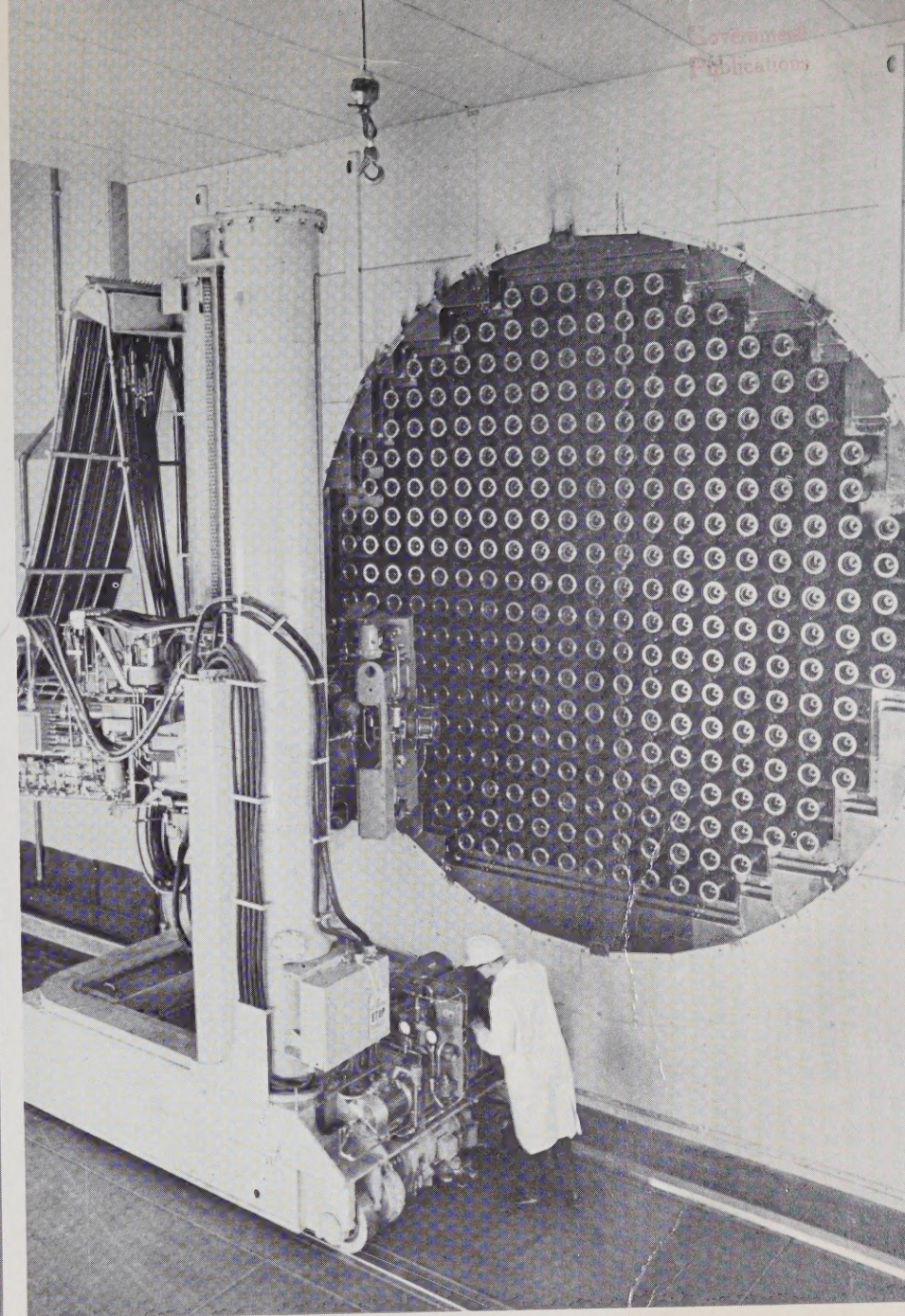
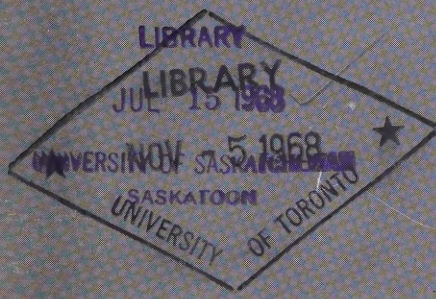


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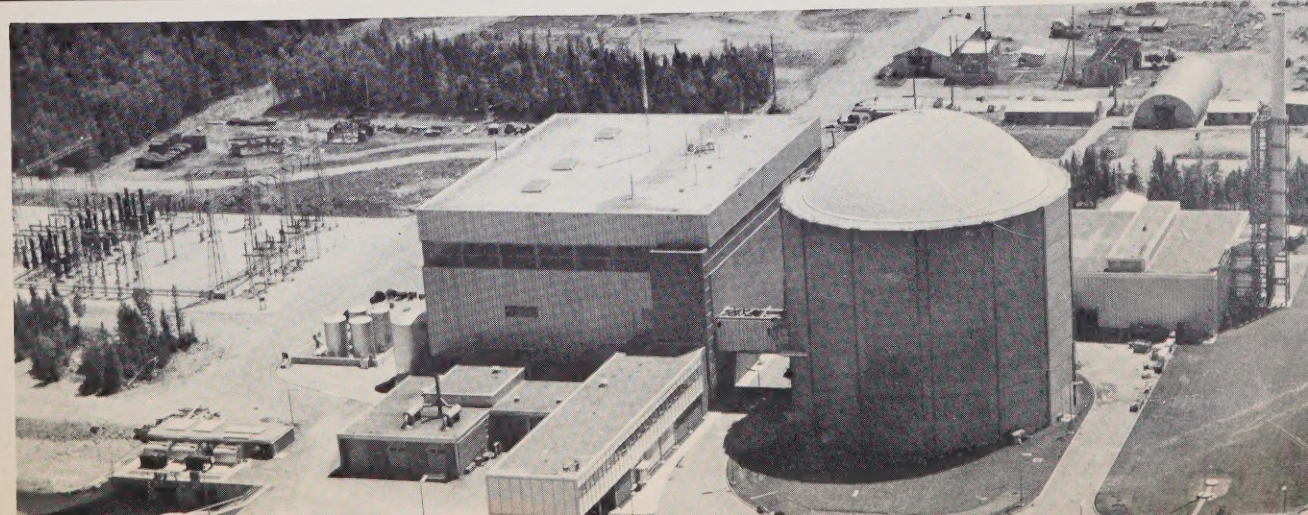
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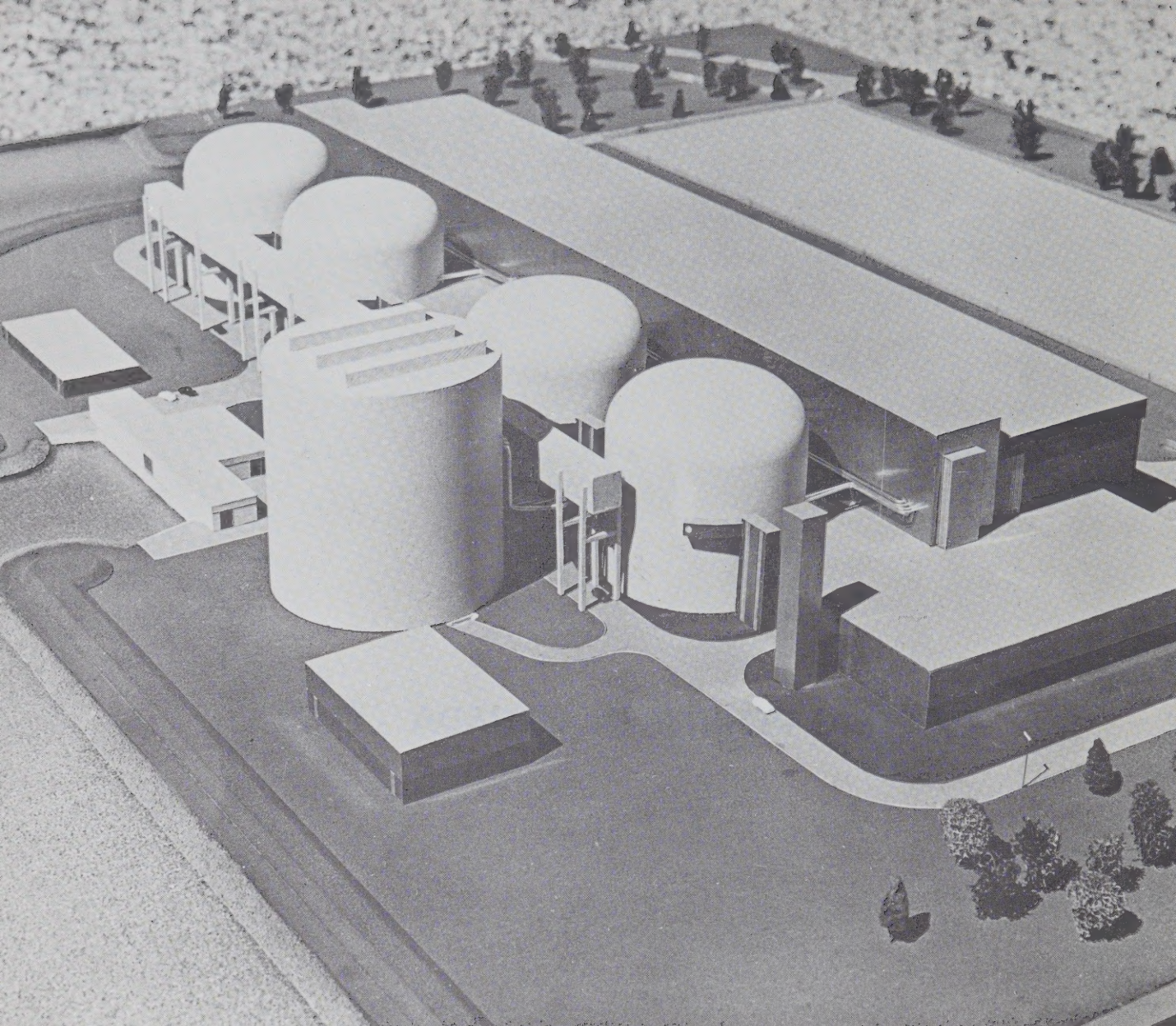
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*Model of nuclear station under construction at
Pickering, Ontario.*



ELECTRIC POWER IN CANADA • 1966

DEPARTMENT OF ENERGY, MINES AND RESOURCES
INLAND WATERS BRANCH



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PREFACE

"Electric Power in Canada" presents a general outline of the history of power development in Canada and discusses briefly the availability and distribution of water power and fuel resources. Also presented is a report in detail on progress during 1966 in the development and planning of new power generating facilities and a list of hydro and thermal generating stations with minimum installed generating capacities not less than 1,500 kw.

The Branch acknowledges with thanks the co-operation of the power-producing agencies in every province in Canada in making available the information used in the preparation of this publication. The Branch is indebted also to the Dominion Bureau of Statistics with whom close liaison has been maintained in the collection of information on existing power development.

The map inside the back cover shows main transmission systems and electric power generating stations in Canada.

A series of maps showing similar information in greater detail is available for the following regions:

1. British Columbia, Yukon Territory and Northwest Territories
2. Alberta, Saskatchewan and Manitoba
3. Ontario
4. Québec
5. New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland

These maps are available from:

Director
Inland Waters Branch
Department of Energy, Mines &
Resources
Ottawa 4, Ont.

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Hydro-Electric Power Commission of Ontario
MacMillan Bloedel and Powell River Limited
Manitoba Hydro
National Film Board
New Brunswick Electric Power Commission
Nova Scotia Light & Power Company Limited
Nova Scotia Power Commission
Québec Hydro-Electric Commission
Saskatchewan Power Corporation

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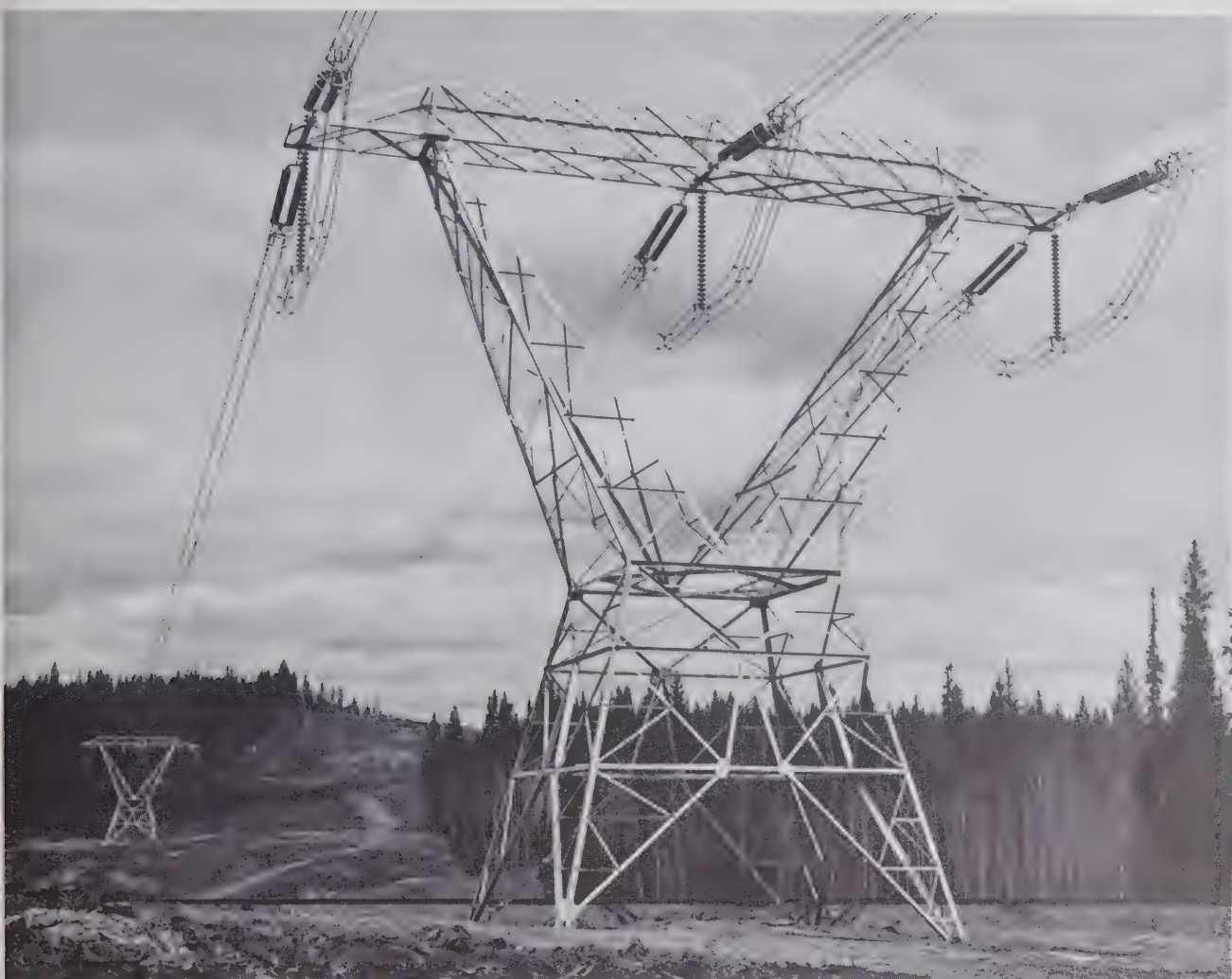
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Electric power serving downtown Montreal.



DEVELOPMENT OF ELECTRIC POWER IN CANADA



Transmission tower at Quesnel, British Columbia, designed to carry power from the Peace River hydro complex.

History of Power Development

The history of electric power development in Canada has been one of remarkable and sustained growth since the beginning of the century. The graph on page 5 illustrates the expansion in installed generating capacity in hydro and thermal stations that has taken place in the last fifty years. Table 1 shows hydro and thermal generating capacity by province or territory at December 31, 1966.

It can be seen from the graph that, although thermal power has made a significant contribution towards satisfying the nation's power needs, hydro power has carried by far the larger part of the burden. This is to be

expected when one considers that Canada, in terms of water power resources, is one of the most richly endowed nations in the world.

From a modest total of 133,000 kw. of generating capacity installed at the end of 1900, Canada's total installed hydro capacity rose to the substantial total of almost 22.7 million kilowatts by the end of 1966. In the same period, thermal capacity grew to 8.7 million kilowatts.

The rate of installation of thermal capacity in the early 1900's was extremely low

TABLE 1 - INSTALLED ELECTRIC GENERATING CAPACITY IN CANADA

31 December 1966

Province or Territory	Installed Generating Capacity - kw		
	Hydro	Thermal	Total
British Columbia	2,695,000	1,083,000	3,778,000
Alberta	617,000	1,096,000	1,713,000
Saskatchewan	397,000	662,000	1,059,000
Manitoba	1,074,000	338,000	1,412,000
Ontario	6,194,000	3,923,000	10,117,000
Quebec	10,746,000	441,000	11,187,000
New Brunswick	262,000	433,000	695,000
Nova Scotia	143,000	525,000	668,000
Prince Edward Island	-	57,000	57,000
Newfoundland	466,000	113,000	579,000
Yukon Territory	28,000	4,000	32,000
Northwest Territories	35,000	27,000	62,000
CANADA	22,657,000	8,702,000	31,359,000

and until the late 1940's the part played by thermal generating equipment in Canada's power economy was of relatively minor importance. On the other hand, improvements in electric power transmission techniques introduced at the turn of the century and an increasing emphasis on larger hydro plants led to a generally accelerated rate of development of hydro facilities.

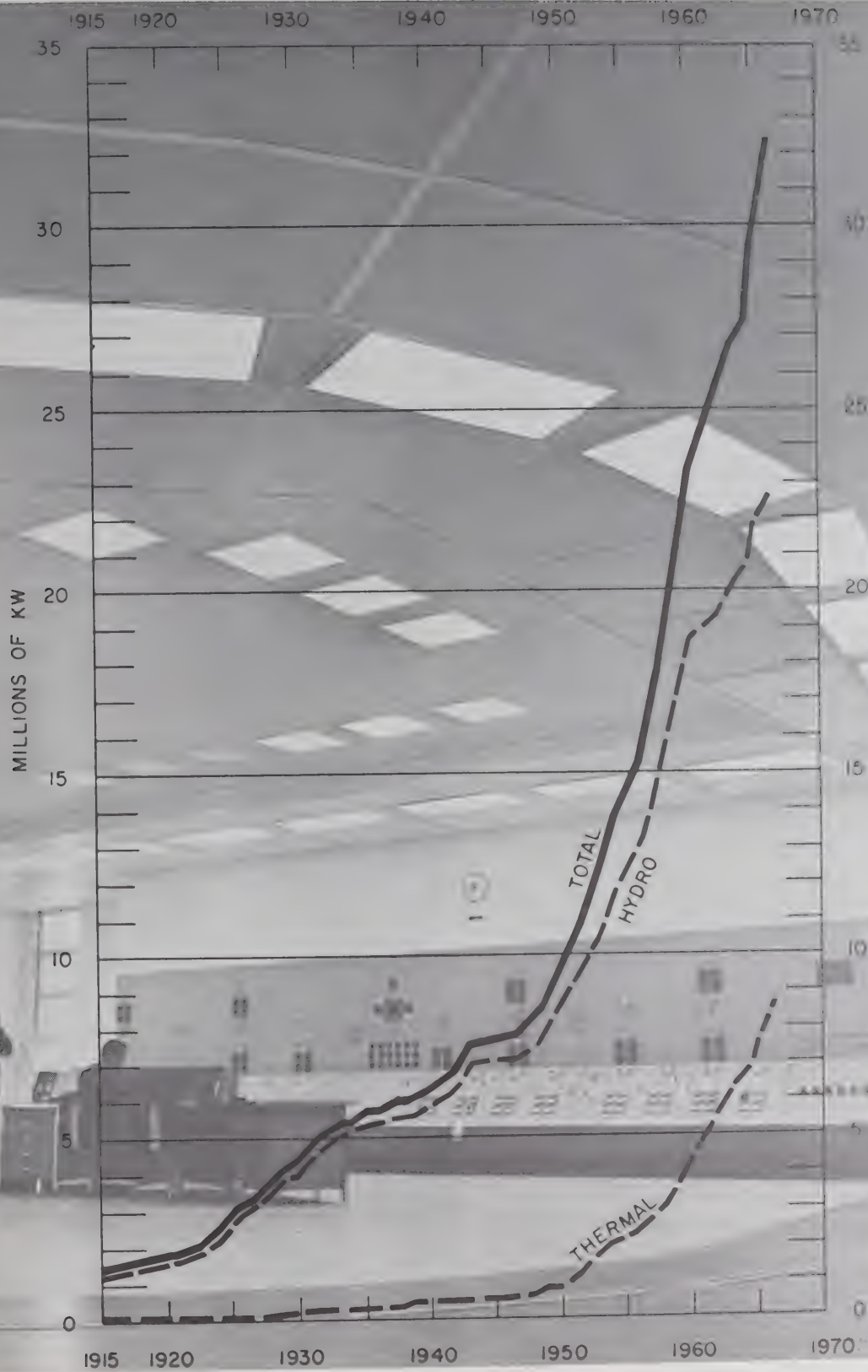
The noticeable jump in the hydro installation rate in the 1920's is a result of the heavy demand for electric power during this prosperous period. The drop in power demand in the depression years of the early 1930's did not show up as a drop in the installation rate until about 1935, due to the time lag which is inherent in hydro-electric power development. Hydro projects initiated prior to the depression years were completed, accounting for the continuation of a high rate of capacity installation up until 1935. Thereafter, poor economic conditions reduced the installation rate in the period 1935 - 1939.

The tremendous demand for power to drive Canada's war industries was responsible for the sharp rise in installation of new generating facilities between 1940 and 1943. Construction

of new facilities dropped off in the later war years, however, so that from 1944 to 1947, a second flattening in the growth curve is evident.

Post-war industrial expansion and rapidly-growing residential and agricultural developments imposed extremely heavy demands on power generating facilities. To stay abreast of these demands required the addition of new generating capacity at a rate higher than at any time in Canada's history. The sharp increase in installed generating capacity that followed could not be satisfied from hydro sources alone and this period marks the beginning of an extensive program of thermal plant construction.

In the period 1950 - 1966, the average annual rate of installation of both hydro and thermal facilities has been some 1.4 million kilowatts, with hydro contributing two kilowatts of new capacity for each kilowatt contributed by thermal. It is of interest to note, however, that the average increase in thermal generating capacity over the five years from 1961 - 1966 has equalled the average increase in hydro capacity and promises to surpass it in the not too distant future.



Growth of electric power generating capacity in Canada.

Current Trends in Power Development

Water power traditionally has been the main source of electric energy in Canada. This is still true today. However, thermal sources are playing an increasingly important role in power supply and undoubtedly will some day supersede water power as the main supplier of electric energy. The choice between development of a hydro-electric power site and construction of a thermal generating station must take into account a number of complex considerations, the most important of which are economic in nature.

In the case of a hydro-electric project, finance charges are high because of large capital outlays but these are more than offset by low maintenance and operating costs. The long life of a hydro plant and its dependability and flexibility of operation in meeting varying loads are added advantages. Also important is the fact that the water which drives the hydro turbine is a renewable resource.

Probably the most important advantage of the thermal station, on the other hand, is the fact that it can be located close to the demand area, with a consequent saving in transmission costs. With the current trend to large steam stations, however, some of the flexibility of location of thermal stations is lost since they require considerable quantities of water for cooling purposes, making it essential that they be sited near an adequate water supply.

The marked trend to thermal development which became apparent in the 1950's can be explained in part by the fact that in many parts of Canada, most of the hydro-electric sites within economic transmission distance of load centres had been developed and planners had to turn to other sources of electric energy. More recently, however, advances in extra-high-voltage transmission techniques are providing a renewed impetus to the development of hydro power sites previously considered too remote.

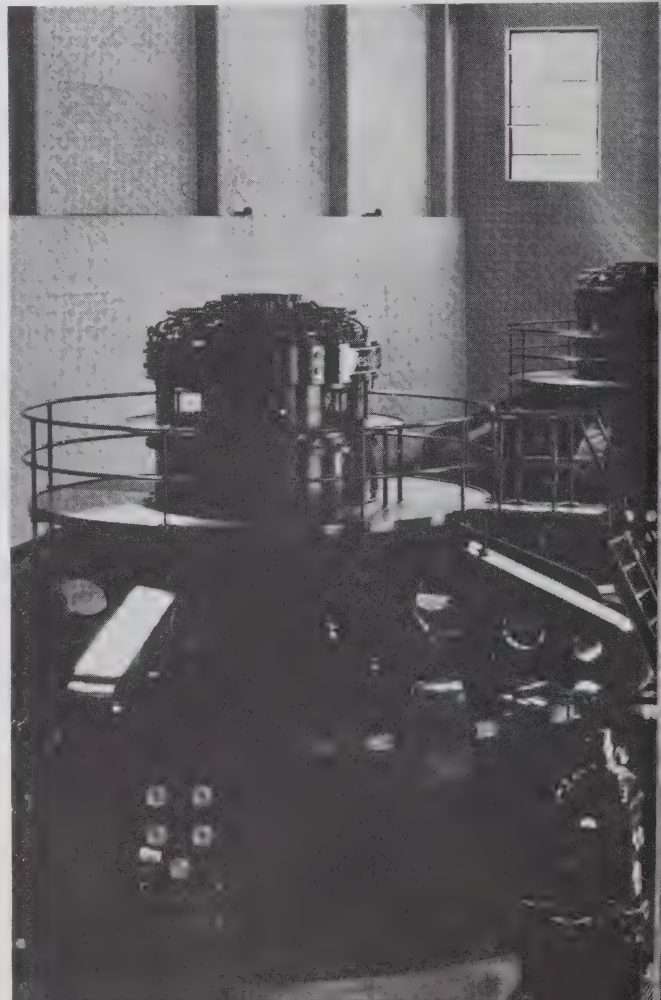
Large thermal units require a relatively long starting-up time and consequently lack flexibility of operation. They are most efficient for meeting conditions of continuous load. On the other hand, hydro stations, can put generating units on line with a minimum of delay and hence are admirably suited to supply power to meet the peak loads which may occur several times each day. By combining the advantages of both hydro and thermal stations in integrated supply systems, power producers are now achieving much greater flexibility of operation.

The trend towards larger, more economical

thermal units results in the need for more reserve capacity to maintain the uninterrupted service that customers have come to expect and rely on. However, as the total capacity of an operating system increases through load growth or interconnection with other systems, the size of any one unit in relation to the total system capacity becomes less, and the proportion of capacity required for reserve is reduced.

Another trend in development designed to meet the problem of varying daily loads is the use of pumped storage. An example is the Sir Adam Beck hydro development at Niagara Falls, water taken from the Niagara River above the Falls is carried by means of a tunnel and a power canal to the penstocks which supply the main generating station on the bank of the

Generators in the Upper Bonnington hydro station the Kootenay River in British Columbia have been service for sixty years.



Niagara River some distance below the Falls. In off-peak hours, surplus power from the main station is used to pump water from the power canal into a reservoir maintained at a higher level. During peak-load hours, the pumping-generating units operate as generators and are driven by water released from the reservoir. The pumping-generating units at the Sir Adam Beck development make available an extra 176,700 kw. of generating capacity. A pumping-generating station using the same general principle has recently been completed on the Brazeau River in Alberta as part of the 326,470-

kw. Big Bend hydro development.

Perhaps the most promising application of the pumping-generating principle is its use in conjunction with nuclear power stations. Nuclear units, in common with larger conventional thermal units, can be used most efficiently under conditions of continuous operation. Off-peak nuclear power can be used to operate pumping-generating units as previously described and the hydro-electric power derived from operating the units as generators is available for use during periods of peak demand.

Utilization of Electric Power

In 1966, Canada's generating facilities produced a total of 157,682,973,000 kilowatt-hours of electric energy, after allowing for the energy used in the power stations themselves. Of this total, 130,063,836,000 kwh. was produced in hydro-electric stations and 27,619,137,000 kwh. in thermal stations. Energy exported to the United States exceeded by 1,252,471,000 kwh. the energy imported from United States during the year, bringing to 156,430,502,000 kwh. the total energy made available.

amount of energy used is shown as a combined total. Energy used for street lighting, represents slightly less than one per cent of the total energy made available and is included in the "commercial" category.

INDUSTRIES

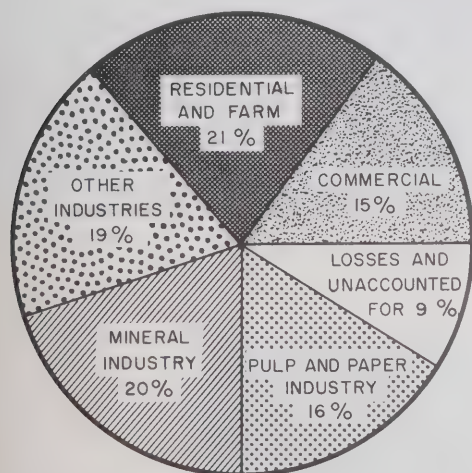
About 20 per cent of the total energy made available in Canada is used in the mineral industry, including smelting and refining, 16 per cent by the pulp and paper industry and 19 per cent by other industries. The chemical industry and the primary iron and steel industry together consume almost one-half of the total amount used by the "other industries".

Approximately 75 per cent of the energy consumed by the mineral industry in Canada is used in the smelting and refining of metals.

Canada has no known deposits of bauxite but the availability of low-cost hydro-electric power has fostered the establishment of an aluminum industry which produces one-quarter of the world's supply of this metal. Further evidence of the value of water power to mining operations is provided by the fact that Canada's asbestos industry, which produces approximately half of the total world supply of asbestos, obtains the major part of its power supply from hydro-electric sources.

The incidence of large water power resources in those regions in which the more important mineral deposits have been found has greatly facilitated mining development. Recent examples are the nickel mining and refining complex at Thompson, Manitoba, which uses hydro-electric power generated in the Kelsey plant on the Nelson River, and the iron ore mining operations in Labrador supplied by the Twin Falls plant on the Unknown River.

Metal mining, a very important division



Principal uses of electric energy in Canada.

Industry uses approximately 55 per cent of the total electric energy made available in Canada; residential and farm use accounts for 21 per cent and commercial use 15 per cent. The remaining 9 per cent is listed under "losses and unaccounted for". Because many power producers do not distinguish in their records between residential and farm customers, the



*Pine Point townsite in
Northern Alberta with open pit
mining operation and
concentrator in background.*



Open pit mining

*5,000 ton per day zinc-lead
concentrator.*



of the Canadian mining industry, is carried on mainly in two physiographic regions, the Western Cordillera and the Canadian Shield. In the Western Cordillera, the mountainous topography and the relatively high amounts of precipitation favour the development of water power. In the Canadian Shield, which is a Precambrian formation stretching in a wide sweep around Hudson Bay from the Mackenzie River basin to the eastern tip of Labrador, heavy glaciation in recent geological times has formed river systems which are comparatively young and are characterized by large numbers of lakes connected by short river sections with numerous rapids and falls suitable for development as hydro-electric power sites.

The pulp and paper industry in Canada is one of the world's great industrial enterprises. Total mill capacity for the production of newsprint paper is considerably greater than that of any other country in the world and in total production of wood pulp, Canada is second only to the United States.

The fact that over 90 per cent of the manufactured newsprint is exported gives some indication of the importance of the industry to Canada's export trade program.

By far the larger portion of the energy used in the pulp and paper industry is derived from water power.

Power and Population

The figures in Table 2 illustrate for each Province and Territory, and for Canada as

million kilowatt-hours of electric energy was generated by the electric industry, about 57

TABLE 2 - POWER AND POPULATION

31 December 1966

Province or Territory	Estimated Population	Net total Electric Energy Generated 1,000's kwh	Per Capita Electric Energy Generated kwh
British Columbia	1,862,000	20,788,963	11,170
Alberta	1,464,000	6,098,839	4,170
Saskatchewan	954,000	3,927,981	4,120
Manitoba	958,000	6,137,067	6,410
Ontario	6,895,000	48,414,069	7,020
Quebec	5,744,000	62,953,208	10,960
New Brunswick	627,000	3,200,755	5,110
Nova Scotia	760,000	2,851,100	3,750
Prince Edward Island	109,000	155,167	1,420
Newfoundland	505,000	2,855,305	5,650
Yukon and N.W.T.	41,000	300,519	7,330
CANADA	19,919,000	157,682,973	7,920

a whole, the estimated population, the net total electric energy generated and the per capita electric energy generated.

During 1966, a net total of 157,683

per cent of the amount which in theory could be generated if the 31,359,000 kw. of generating capacity installed at the end of 1966 was operating continuously.

Water Power Resources of Canada

Table 3 presents a summary of developed water power in Canada and an estimate of undeveloped water power potential, based on records maintained by the Inland Waters Branch.

Estimates of available power are shown for undeveloped sites only; for developed sites the total generating capacity actually installed is indicated. It should be emphasized that the capacity installed at an existing hydro-electric development frequently is in excess of the continuous power available at the site. The relationship between installation and available power is explained more fully later in this section.

Undeveloped Water Power

Column 2 of Table 3 lists the estimated continuous power ordinarily available during

periods of low discharge under existing conditions of river flow. These estimates are based upon Q95, which is the natural or modified flow available 95 per cent of the time.

Column 3 lists the estimated dependable maximum power based upon Q50, the natural or modified flow available for a least 50 per cent of the time.

Column 4 lists the estimated dependable maximum power based on Qm, the arithmetical mean flow.

On rivers for which flow records are sparse or non-existent, estimates of flow are made from available information relating to runoff in the same general area.

As a rule, the figures of undeveloped water power at the various rates of flow reflect only the potential of undeveloped sites which at present are considered feasible for development.

TABLE 3 - WATER POWER RESOURCES OF CANADA

31 December 1966

Province or Territory	Undeveloped Water Power			Developed Water Power
	Available Continuous Power at 88% Efficiency			Installed Generating Capacity kw
	at Q95(a) kw	at Q50(b) kw	at Qm(c) kw	
British Columbia	4,946,000	16,635,000	24,665,000	2,695,000
Alberta	895,000	3,244,000	4,866,000	617,000
Saskatchewan	773,000	1,298,000	1,559,000	397,000
Manitoba	2,964,000	5,501,000	5,853,000	1,074,000
Ontario	467,000	1,102,000	1,663,000	6,194,000
Québec	8,027,000	27,788,000	36,576,000	10,746,000
New Brunswick	62,000	221,000	497,000	262,000
Nova Scotia	21,000	112,000	165,000	143,000
Prince Edward Island	-	1,000	2,000	-
Newfoundland	1,240,000	3,635,000	4,871,000	466,000
Yukon Territory	664,000	3,237,000	5,689,000	28,000
Northwest Territories	864,000	2,232,000	3,322,000	35,000
CANADA	20,923,000	65,006,000	89,728,000	22,657,000

(a) - Power equivalent of flow available 95 per cent of the time.

(b) - Power equivalent of flow available 50 per cent of the time.

(c) - Power equivalent of arithmetical mean flow.



Granville Falls on Churchill River in Manitoba.

In the case of Québec, however, the figures of undeveloped water power reflect the gross potential, that is, the power which would be derived from development of the total head on the river, rather than the combined head at a number of specific sites. The figures for Québec are based only on rivers whose drainage areas exceed 3,000 square miles. The power potential of smaller rivers is neglected on the grounds that sites on these rivers will probably never be developed and because the total potential of these sites represents only a very small percentage of the province's total undeveloped power.

It should be emphasized that the figures of undeveloped water power in Column 2 represent only the minimum water power possibilities in Canada. The reason for this is that the estimates are based upon existing river flows, which for the most part do not reflect the benefits of streamflow regulation that would result from the development of storage potential. The figures of undeveloped water power in Column 3 correspond to the flow available 50 per cent of the time, with the result that partial regulation is required in some instances. The figures in Column 4, however, are determined from the arithmetical mean flow and represent the power obtainable if the entire

flow in the river could be regulated to provide a continuous flow of constant magnitude. Since this last condition assumes complete regulation, estimates of potential based upon arithmetical mean flow will, if other pertinent factors are neglected, exceed the amount of installed capacity that might be expected to be installed at the site, particularly where little or no storage is available. Experience in the development of water power sites, however, has indicated that in fact, the generating capacities installed at many recently developed sites greatly exceed what might be dictated by even the arithmetical mean flow.

Estimates of the magnitude of undeveloped water power resources are continually revised on the basis of the latest information available.

Several major river diversion possibilities exist, particularly in British Columbia, where topographical conditions make possible such rearrangements of flow. The estimates of potential of British Columbia's undeveloped hydro resources have been altered recently to include figures based upon the diversion of rivers which, if they are developed at all, will almost certainly be developed on a combined-river basis.



Lower Bonnington hydro station on the Kootenay River in British Columbia.

Developed Water Power

The figures of installed generating capacity shown in Column 5 of Table 3 are based upon the manufacturer's rating in kilowatts as shown on the generator name-plate, or derived from the rating where it is indicated in kilovolt-amperes.

The maximum economic installation at a power site can be determined only by careful consideration of all the conditions and circumstances pertinent to its individual development and its role in the system. It is the usual practice, to install units which have a combined capacity in excess of the available continuous power at Q50, and frequently in excess of the power available at Qm. There are a number of reasons for this. The excess capacity may be installed for use at peak-load periods, to take advantage of periods of high flow, or to facilitate plant or system maintenance. In some instances, storage dams have been built subsequent to initial development to smooth out fluctuations in river flows. In other cases, deficiencies in power output during periods of low flow have been offset by auxiliary power supplied from thermal plants, or by inter-connection with other plants which operate under different load conditions or are located on rivers with different flow characteristics.

The extent to which the installed capacity exceeds the available continuous power at the various rates of flow is dependent upon the factors which govern the system of plant operation, and varies widely in different areas of the country. In some developments,

the difference may amount to several hundred per cent. For this reason, discretion should be used in comparing the figures in Column 5 with those in Columns 2, 3 or 4, as available continuous power and installed capacity are not directly comparable. As a rough guide, however, it may be assumed that the power equivalent of the flow at Q50 represents an approximate, although conservative, estimate of hydro generating capacity remaining to be installed in Canada.

Water Power Distribution in Canada

Table 3 indicates the distribution of undeveloped water power resources and installed generating capacity in Canada. A review of the table shows that substantial amounts of water power have been developed in all provinces except Prince Edward Island, where water power resources are meagre. As the development of Canada's natural resources proceeds, the fortunate incidence of water power in proximity to mineral deposits, pulpwood and other natural resources becomes increasingly apparent. There is little doubt that the existence of large amounts of potential hydro power on northern rivers will prove to be a factor of prime importance in the eventual realization of the natural wealth of Canada's north.

BRITISH COLUMBIA, traversed by three distinct mountain ranges and with, generally speaking, a high rate of precipitation, has many mountain streams which offer abundant opportunity for the development of hydro-electric power. In terms of recorded available water power resources, developed and undeveloped, the

province ranks second in Canada. In the amount of generating capacity installed, it is exceeded only by Québec and Ontario.

Notable for the magnitude of their power potential are such rivers as the Columbia, Fraser, Peace and Stikine. Up to the present, however, hydro-electric developments on smaller rivers in the southern part of the province have been called upon to satisfy the major load requirements of British Columbia. The immense power resources of the Peace River are now being harnessed and by 1968 will supply energy to the southern part of the province. Development of the Columbia River, now well under way, is designed to provide initially three huge storage reservoirs and eventually to make available a significant amount of "at site" power in the Canadian portion of the basin.

The foremost producer and distributor of electric power in British Columbia is the provincially-owned British Columbia Hydro and Power Authority.

In ALBERTA, most of the principal hydro-electric developments are located on the Bow River and its tributaries, and from these developments, Calgary Power Ltd. serves most of the southern part of the province. The Big Bend development, completed in 1966 on the Brazeau River in the headwaters of the North Saskatchewan River, is now supplying power to augment the energy from the Bow River plants. Substantial water power resources are located in northern regions of the province, and although these are somewhat remote from present centres of population, the advent of extra-high-voltage transmission has enhanced the prospect of their development.

In SASKATCHEWAN, large water power resources exist in the central and northern parts of the province, principally on the Churchill, Fond du Lac, and Saskatchewan Rivers. Prior to 1963, power to serve the more settled parts of the province came from thermal-electric plants fuelled by coal, oil or natural gas, while hydro-electric power generated in the province was used almost exclusively for mining purposes in northern areas. In 1963, Saskatchewan River power from Squaw Rapids, the first hydro development on the Saskatchewan River, began supplying the transmission network of the provincially-owned Saskatchewan Power Corporation.

Of the three Prairie Provinces, MANITOBA, with immense hydro-electric capabilities on the Winnipeg, Churchill, Nelson and Saskatchewan Rivers, is the most generously endowed with water power resources. For many years hydro-electric generating stations on the Winnipeg River have supplied most of the electric power requirements in southern Manitoba. Manitoba Hydro's high-voltage, long-distance transmission lines, however, will carry ever-increasing amounts of power south from hydro-electric stations on northern rivers to help meet the province's constantly growing power demands.

Almost all of the sizeable water power potential in ONTARIO within easy reach of load centres has been developed and planners have been looking to the more remote sites as new sources of supply. The James Bay hydro-electric power complex, which has been under development since 1958, has involved the construction of three plants on the Mattagami River and one on the Abitibi River. The last of the four plants came into service in 1966. Power from this



er Rapids hydro station
the Abitibi River in
Ontario.

complex is fed to southern Ontario via extra-high-voltage transmission lines. Investigation of the power potential of Ontario rivers flowing into Hudson Bay and James Bay is part of a comprehensive investigation of the water resources of the region, undertaken late in 1965 by the Governments of Canada and Ontario. Power plant construction is going on in the area north of Lake Huron and several sites in this area and in the headwaters of the Ottawa River are under investigation. Most of the hydro-electric power produced in the province comes from the generators of the Hydro-Electric Power Commission of Ontario, Canada's largest power producing and distributing organization. Ontario's largest generating station is located on the Niagara River at Queenston, where the Sir Adam Beck - Niagara Generating Stations Nos. 1 and 2, and the associated pumping - generating station have a combined generating capacity of 1,804,200 kw. In addition to the power generated in its own plants, the Commission purchases large amounts of electric power generated outside the province, chiefly in Québec.

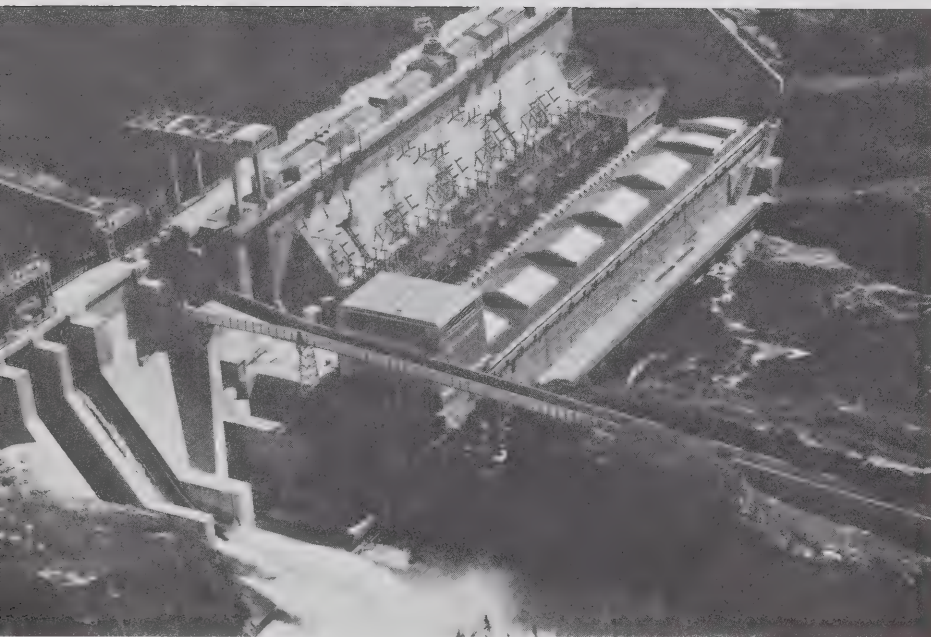
QUÉBEC is richest of all the provinces in water power resources, possessing more than 40 per cent of the total recorded for Canada. Québec also leads in developed water power - its present installation of 10.7 million kilowatts representing about 47 per cent of the national total. The largest single hydro-electric installation in Canada is the Québec Hydro-Electric Commission's 1,574,260-kw. Beauharnois development on the St. Lawrence River. Also

notable are the Commission's Bersimis I development on the Bersimis River with an installed capacity of 912,000 kw. and the Aluminum Company of Canada Limited 742,500-kw. Chute des Passes plant on the Peribonka River. A major power scheme which represents a significant advance in the development of Québec hydro-electric resources is now under construction. This scheme, involving the harnessing of the headwaters of the Manicouagan and Outardes Rivers, will permit the eventual installation of some 5.8 million kilowatts on the two rivers.

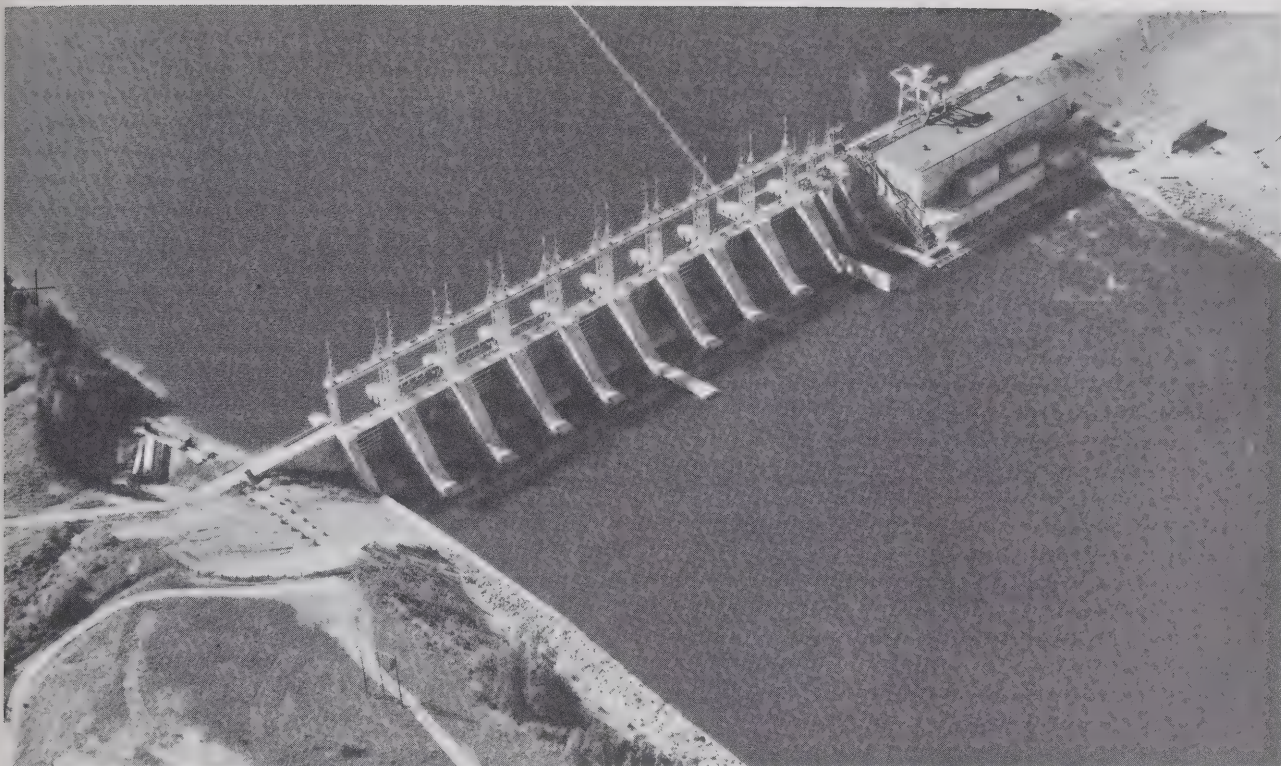
The Québec Department of Natural Resources contributes to the production of hydro-electric power by operating storage reservoirs to regulate the flow of rivers on which hydro plants are located.

Since 1965, all the storage reservoirs in the basins of the St. Maurice, Gatineau, Kipawa, Metis and Ste. Anne de Beaupré Rivers have been operated by Québec Hydro-Electric Commission although the reservoirs continue to be the property of the Department of Natural Resources.

The water power resources of *NEW BRUNSWICK* and *NOVA SCOTIA*, although small in comparison with those of other provinces, are a valuable source of energy and make a substantial contribution to the economies of the two provinces. Numerous rivers in both provinces provide moderate-sized power sites either within economic transmission distance of the principal cities and towns or advantageously situated for use in development of the timber and mineral



Chute du Diable hydro station on the Peribonka River in Quebec.



Beechwood hydro station on the Saint John River in New Brunswick.

resources. These provinces also have extensive indigenous coal supplies. In *PRINCE EDWARD ISLAND*, there are no large streams and water power plants are limited in size to those used to operate small mills.

The water power resources of *NEWFOUNDLAND*, determined on the basis of the limited available streamflow data, are estimated to be of very considerable magnitude. On the island, although the length of the rivers is generally not great, topography and runoff are favourable for hydro-electric power development. Of the substantial capacity installed, a very large portion serves the pulp and paper industry. In Labrador, the Churchill River and its tributaries, now under development, constitute one of the largest sources of water power in Canada.

The *YUKON TERRITORY* and *NORTHWEST TERRITORIES*, which together comprise most of Canada's northland, possess extensive water power resources. Power from present developments is used almost exclusively to satisfy the needs of local mines and adjacent settlements. Due to the lack of developed native fuel sources and to transportation difficulties, water power is of special importance in the development of mining areas such as Yellowknife in the Northwest Territories and Mayo in Yukon Territory. In 1948, to encourage the development of the resources of northern Canada, the Federal Government established what is now the Northern

Canada Power Commission, to be responsible for the construction and management of public utility plants.

In *YUKON TERRITORY*, most of the resources are located on the Yukon River and its tributaries. The possibility exists of diverting the headwaters of the Yukon River through the Coast Mountains and concentrating the head in a development near tidewater in northern British Columbia. Such a development, however, would affect adversely the potential of sites on the main river.

Resources in the *NORTHWEST TERRITORIES* have not been surveyed to the same extent as those in Yukon Territory, but they are nevertheless known to be of considerable magnitude. Extensive water power resources exist on rivers flowing into Great Slave Lake and the Mackenzie River. Of major significance is the hydro-electric potential of the South Nahanni River, which drains to the Mackenzie River via the Liard River. On the basis of preliminary investigations, it is estimated that, with total regulation and complete use of the head susceptible to development, the hydro-electric potential of the South Nahanni River would total close to one million kilowatts. Indications are that the rivers draining the District of Keewatin, north of Manitoba, also will contribute materially to the total power potential of the Northwest Territories.

Thermal Power Development in Canada

The incidence of immense water power resources in Canada and the brisk pace of their development has tended to overshadow the very considerable contribution being made by thermal energy in the nation's power economy. At the end of 1966, the total installed thermal generating capacity in Canada was 8,704,000 kw., about 28 per cent of the total of all electric generating capacity in the country. The fact that energy produced in thermal plants during the year accounted for only 18 per cent of the total may be attributed in part to the fact that a considerable amount of capacity installed is maintained for stand-by purposes.

The current emphasis on thermal plant construction is likely to continue and to become more marked as development of the nation's water power reserves becomes more complete.

Conventional Thermal Power

THERMAL GENERATING STATIONS

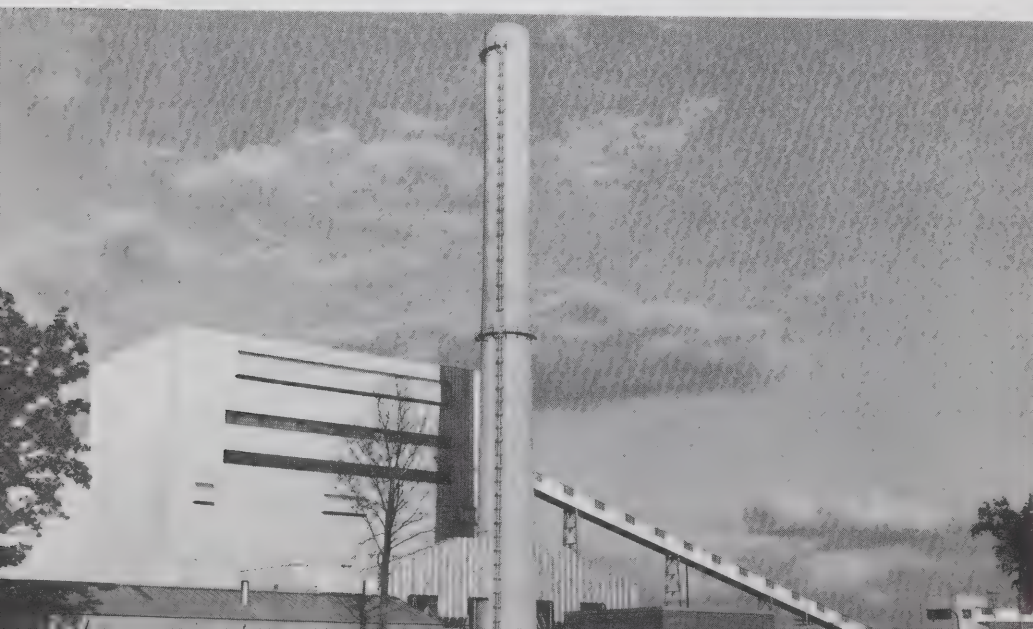
Approximately 85 per cent of all the conventional thermal power generating equipment in Canada is driven by steam turbines. The magnitude of the loads now being carried by steam plants has led to the installation of steam units with capacities as high as 300,000 kw. Even larger units of 500,000-kw. capacity, will go into service within the next two or three years. The remainder of the load is carried by gas turbine and internal combustion equipment. The flexibility of internal combustion engines make this type of equipment particularly suitable for meeting power loads in smaller centres, especially in the more isolated areas.

The figures in Table 1 indicate that the provinces of Alberta, Saskatchewan, Nova Scotia and Prince Edward Island depend upon thermal capacity for most of their power requirements. New Brunswick has slightly more thermal than hydro. In Ontario, where the present hydro capacity is a little less than twice the thermal, forecasts based upon present construction schedules indicate that by the early 1970's the province's total installed thermal capacity will have overtaken hydro.

More than half of *BRITISH COLUMBIA'S* thermal generating capacity is installed in three plants located in the Vancouver area. The capacity of the largest of these plants, the 486,000-kw. Burrard generating station, is expected to be increased to 648,000 kw. by 1967 and to 810,000 kw. in 1968.

The incidence of vast fuel resources in *ALBERTA* accounts for the emphasis on thermal power generation in the province. Alberta's largest thermal plants are the 405,000-kw. gas turbine and steam station at Edmonton and the 282,000-kw. Wabamun steam station. While large amounts of both hydro and thermal capacity are now under construction, development projected over the next few years will be predominantly thermal.

Until recently, *SASKATCHEWAN* has relied upon thermal capacity to satisfy the needs of the more settled areas, hydro-electric power generated in the province being used almost exclusively for mining purposes in northern areas. Within the last few years creation of storage on the South Saskatchewan River has led to the development of two hydro sites, one of which was completed in 1966 on the Saskatchewan River. The other is at present under construction on the South Saskatchewan River. Power



*Selkirk thermal plant
in Manitoba.*

needs in the province, however, require the continuing expansion of thermal facilities; the largest under way at present is the 300,000-kw. addition at the Boundary Dam station, one of the two largest thermal stations in the province.

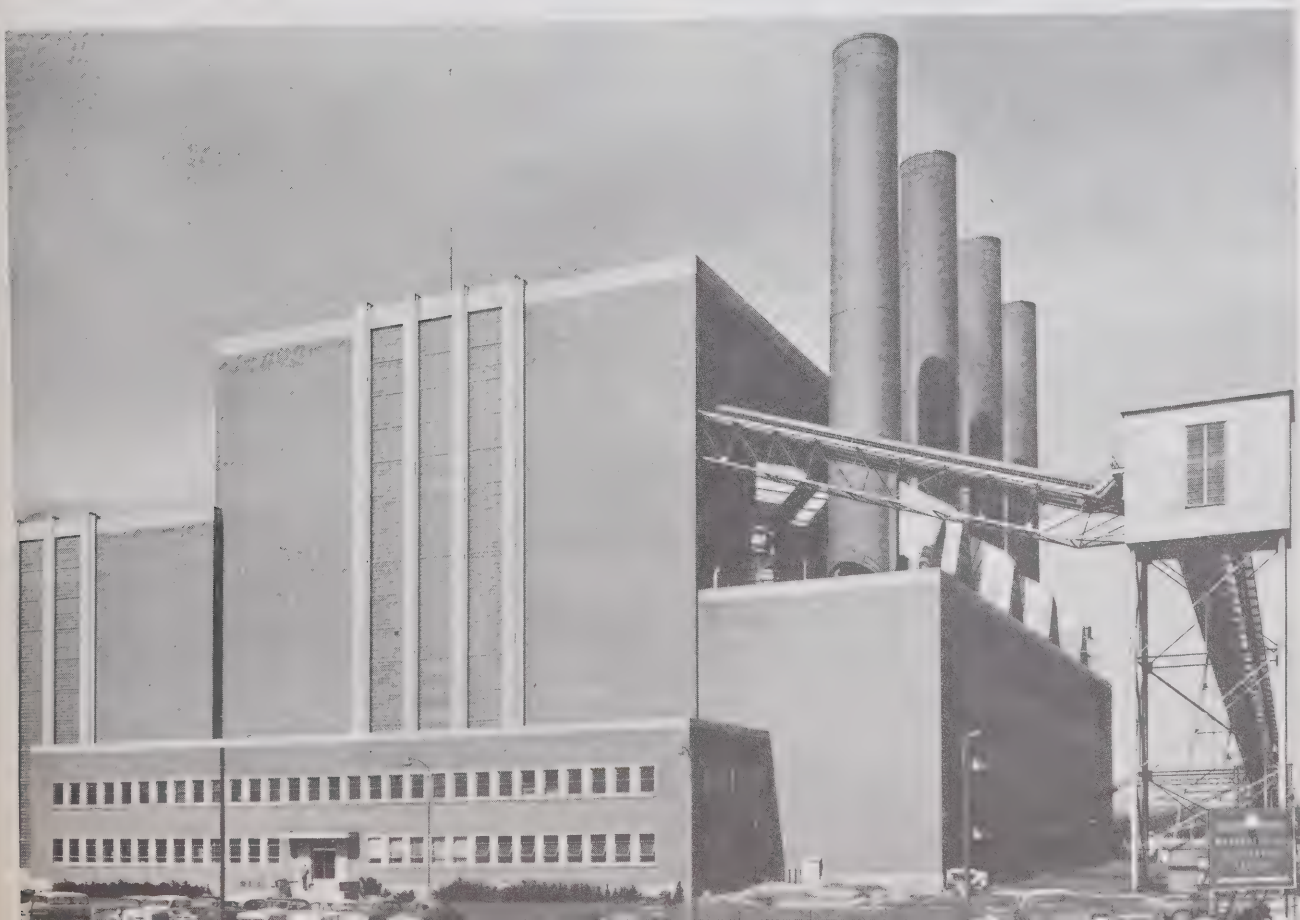
MANITOBA supplements its predominantly hydro-based power supply with a substantial amount of thermal capacity. At the present time, however, the emphasis is on development of the province's water power resources.

ONTARIO has more thermal capacity than any other province in Canada. The thermal capacity installed in the province at the end of 1966 totalled 3,922,836 kw., approximately 45 per cent of the national total. An additional 2.9 million kilowatts of conventional thermal and 1,080,000 kw. of nuclear thermal capacity is scheduled for initial operation in the period 1967-1971. Not yet scheduled but being actively considered is a further 2 million kilowatts of conventional thermal capacity, tentatively planned for initial operation in the period 1972-1977. The 2.9 million kilowatts now under development will be installed at Lakeview and Lambton thermal stations. Lakeview, with an existing capacity of 1.5 million kilowatts, is being boosted to 2.4 million. Lambton is designed for a total capacity of 2 million kilowatts. The 300,000-kw. units at Lakeview

are the largest in service in Canada at the present time; the units to be installed at Lambton will be even larger, with a rated capacity of 500,000 kw. The 2 million kilowatts under consideration for the period 1972-1977 would be installed in a new thermal plant to be built in the Niagara region on the North shore of Lake Erie. A number of oil-burning combustion-turbine units are being installed in various parts of the province as stand-by units and to provide operational flexibility in the event of equipment outage.

The abundance of *QUEBEC'S* water power wealth, much of it within economic transmission distance of existing demand areas, has tended to limit the application of thermal power to specific local use. However, the growing emphasis on thermal power in other parts of Canada, is also beginning to be apparent in Québec, where thermal capacity will not only help guarantee an adequate power supply in the face of increasingly heavy demands but also render the almost exclusively hydro-electric base more flexible through integrated operation. The largest thermal station in Québec, the 300,000-kw. Tracy Station near Sorel, will be doubled in generating capacity in 1967 when two 150,000-kw. units are added. Studies have been completed and plans prepared for another large plant to serve the Gaspé region. Construction of the station will be contingent upon the growth

Richard L. Hearn thermal plant at Toronto, Ontario.





Tufts Cove thermal plant, Nova Scotia.

In *YUKON TERRITORY*, hydro is the main source of supply. Most of the thermal-electric energy used in the Territories is generated by small diesel units.

FUELS

Canada is favoured not only with abundant water power resources, but with exceedingly generous supplies of the fuels from which energy can be produced. Most important of these are coal, petroleum, natural gas and the radioactive ores used to fuel nuclear reactors.

Coal is by far the country's most abundant fuel resource. Most of Canada's coal is found in the western provinces, chiefly Alberta. Smaller quantities occur in the Maritime provinces of Nova Scotia and New Brunswick. Practically all of Canada's oil and natural gas reserves are located in the western provinces, with the greatest concentration in Alberta. The highly populated, industrial areas of southern Ontario and Québec are largely devoid of indigenous fuel supplies and have to rely upon fuels imported from other provinces and from outside Canada. Uranium, the fuel used in Canada's reactors, is available in considerable quantity in both eastern and western Canada.

In 1964, the latest year for which statistics are available, 71 per cent of the total energy produced in thermal-electric utility plants was derived from coal. Gas, most of which is natural gas, accounted for 19 per cent and petroleum fuels, 10 per cent.

Ontario was the main user of coal in 1966, with Saskatchewan, Nova Scotia and Alberta accounting for the bulk of the remainder. Almost all of the gas was used in western Canada, principally in Alberta. Petroleum fuels were used in every province in Canada. New Brunswick accounted for the largest quantity of petroleum fuels used, followed by Nova Scotia, Saskatchewan and British Columbia, in that order.

Nuclear Thermal Power

Commercial electric power generated from the heat of nuclear reaction was first produced in Canada in 1962 in the 20,000-kw. Nuclear Power Demonstration station at Rolphton, Ontario.

Research into reactor design and the application of nuclear energy in the electric power field are among the more important responsibilities of Atomic Energy of Canada Limited, a Government of Canada Crown Company incorporated in 1952.

in power demands in the region, in the next few years. Québec's first nuclear station, to be built on the south shore of the St. Lawrence River between Gentilly and Bécancour, is scheduled for service in 1971 with 250,000 kw. of electric power generating capacity.

Most of the energy generated in thermal-electric utility plants in *NOVA SCOTIA* is derived from coal, with a smaller amount from petroleum fuels. In *NEW BRUNSWICK* petroleum fuels provide slightly more than half of the thermal-electric energy. *PRINCE EDWARD ISLAND* depends almost exclusively on thermal sources for its power supply; almost all the province's generating capacity is oil-fuelled. With the exception of several large plants in St. John's and Grand Falls, most of the thermal-electric capacity in *NEWFOUNDLAND* is made up of relatively small units used to supply power to small, often isolated communities. With the wealth of water power readily available in the province, it is not likely that Newfoundland will experience the need for large thermal stations for some time to come. Thermal stations supply most of the electric power used in both *NOVA SCOTIA* and *NEW BRUNSWICK*. Nova Scotia's largest thermal station is the 167,500-kw. steam plant at Halifax. New Brunswick's Courtenay Bay steam plant, the largest in the province with a capacity of 172,600 kw., is to be increased by 110,000 kw. in 1967. Another substantial addition to the province's thermal capacity will be the new 500,000-kw. steam plant at Dalhousie, scheduled for initial service in 1969.

Until 1965, most of the power requirements of the *NORTHWEST TERRITORIES* were satisfied from thermal sources. In 1965, however, commissioning of the Twin Gorges hydro station on the Taltson River altered the balance in favour of hydro.

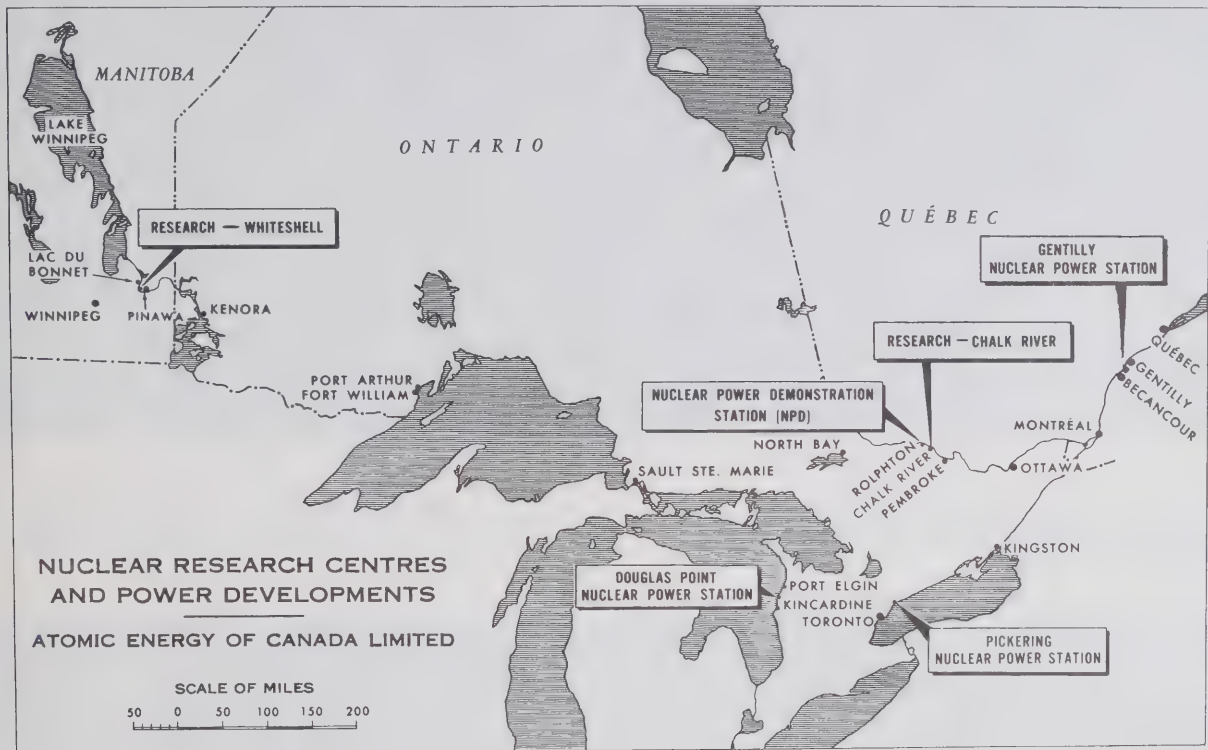
CANDU REACTOR

AECL has concentrated on the development on the CANDU reactor, which derives its name from "Canadian Deuterium Uranium". The CANDU reactor uses natural uranium as a fuel and heavy water as the moderator. Natural uranium is a low-cost nuclear fuel with a high energy yield, and represents a relatively minor item in the cost of power production compared to the use of other fuels; its availability in commercial quantities in Canada is a further advantage.

Station, scheduled to go into operation in the Province of Québec in 1971.

NUCLEAR POWER STATIONS

The Nuclear Power Demonstration station at Rolphton, has been used extensively to demonstrate the ability of the system to operate at a high capacity factor and to determine the nature and predictability of outages. Fuel changes while the system is in operation have become routine and a considerable amount of



The Canadian nuclear power reactor also offers the simplest of nuclear fuel cycles. Sufficient energy can be extracted from the fuel so that the economics of the system do not require a value to be placed on the spent fuel. There is, therefore, no need to carry out costly chemical processing of the spent fuel unless the worth of the remaining contained fissile material becomes sufficiently high to make chemical processing an economic proposition. The spent fuel is an ideal package for simple underwater storage and no large volume of highly radio-active liquids from a chemical processing plant has to be handled and contained.

The next step in the development of the Canadian reactor system is expected to be a change in the coolant of the CANDU system from pressurized heavy water (PHW) to boiling light water (BLW). This new system offers savings in unit capital costs and fuelling costs and consequently in unit energy costs. The first Canadian commercial nuclear-thermal station to use the new BLW system will be the Gentilly

research into the sources of heavy water losses has been carried out. As a result of this research, losses have been cut considerably and the NPD is demonstrating that a very acceptable heavy water loss rate is attainable.

At Douglas Point on the shore of Lake Huron, the country's first full-scale nuclear power station went into operation in 1966. The station, built by Ontario Hydro and Atomic Energy of Canada, houses a 200,000-kw. CANDU reactor which uses heavy water as both coolant and moderator.

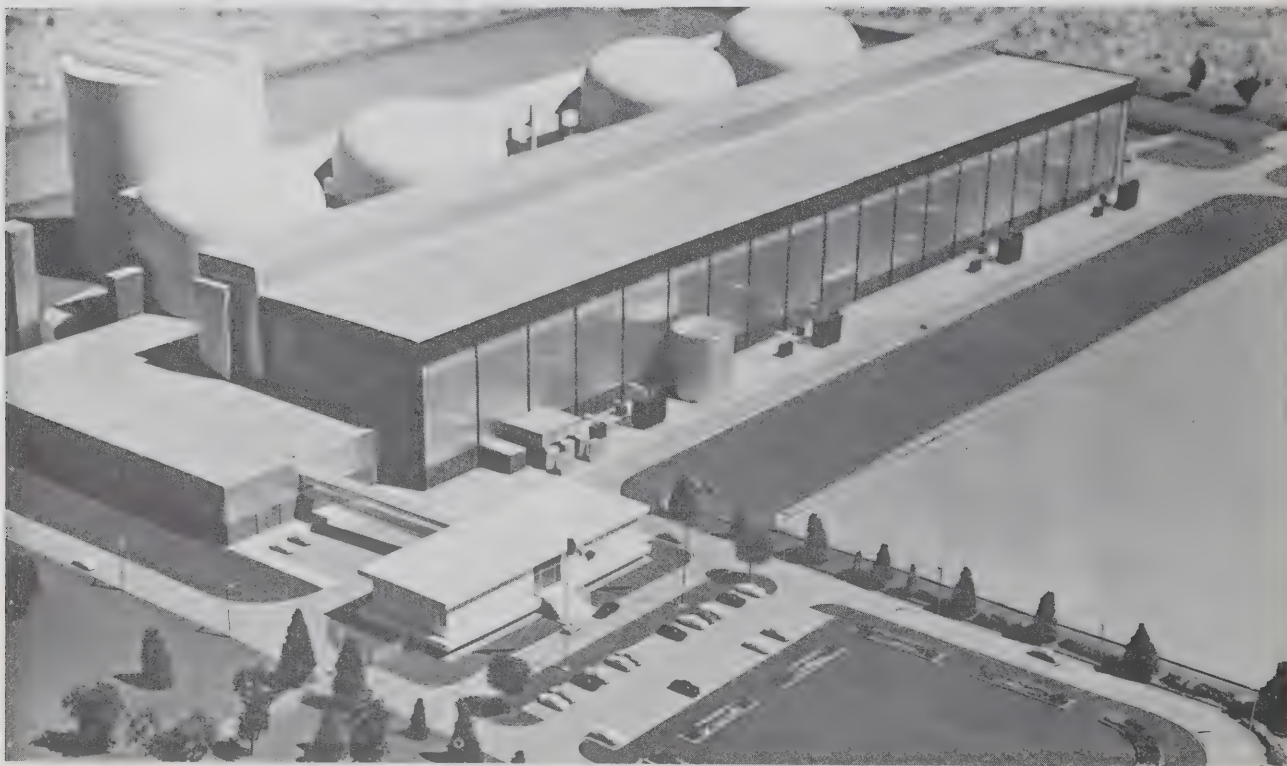
The nuclear-driven units (540,000 kw. each) which will be installed in the Pickering Station, now under construction near Toronto, will compete in size with the largest conventional thermal units now coming into service. The Pickering Station will have two units in service in 1970 and 1971 and two additional units are planned.

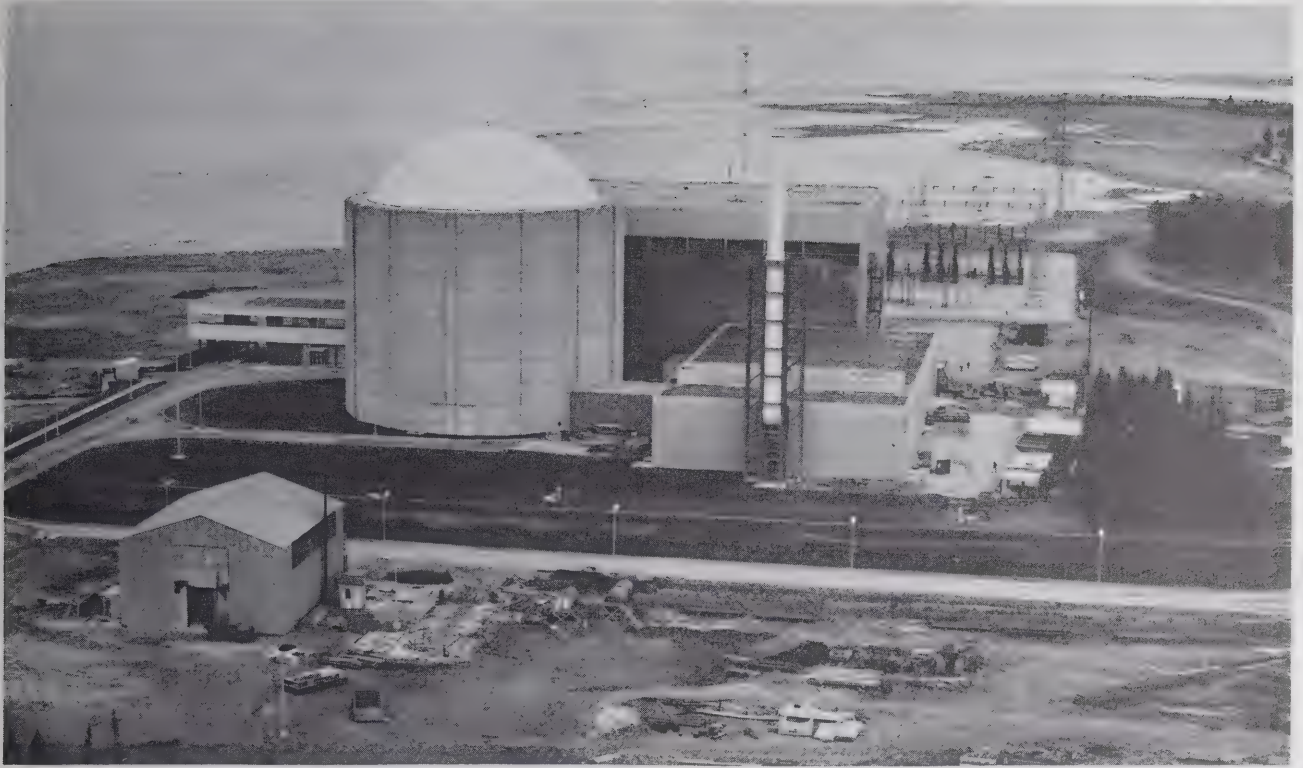
The Gentilly Nuclear Station, mentioned



(above) 20,000-kw. Rolphton nuclear power demonstration station in operation since 1962 in Ontario.

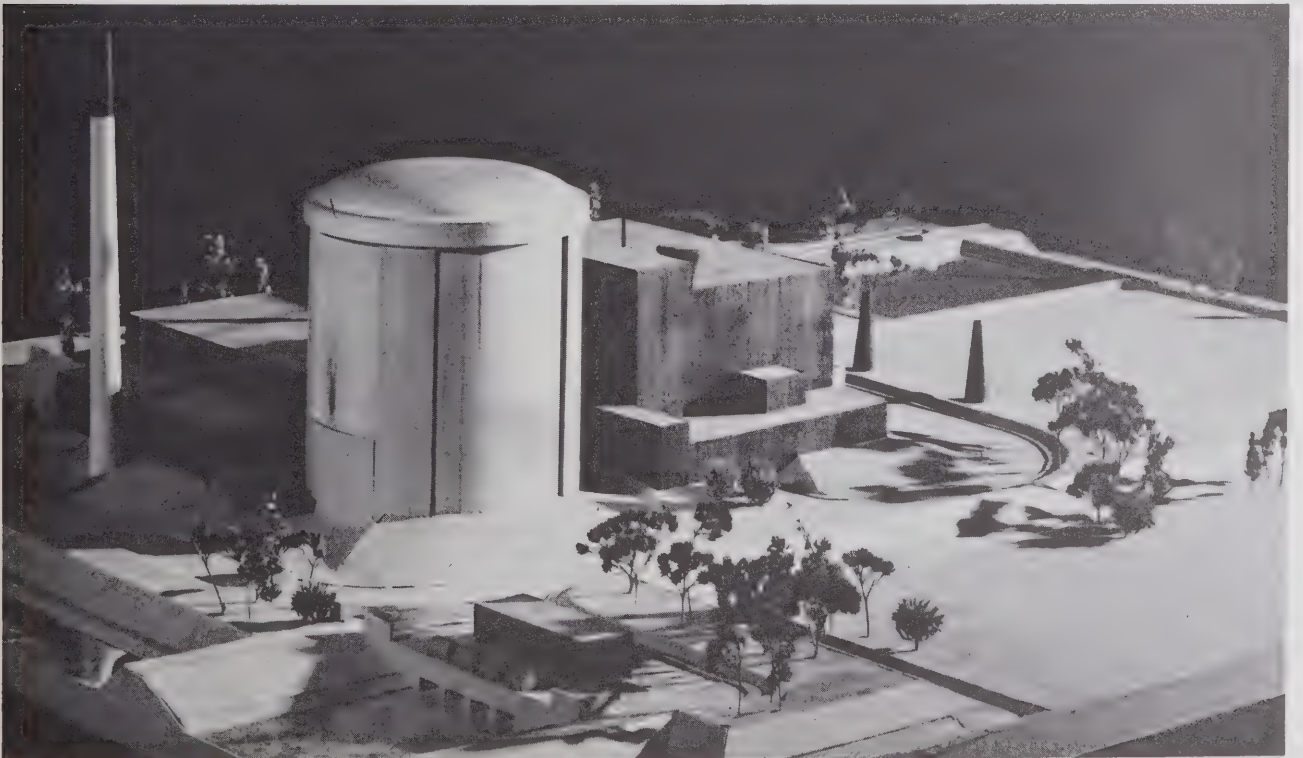
(below) Model of the 1,080,000-kw. Pickering nuclear power station under construction in Ontario.





(above) 200,000-kw. Douglas Point nuclear power station brought into operation in 1966.

(below) Model of 250,000-kw. Gentilly nuclear power station under construction in Quebec.



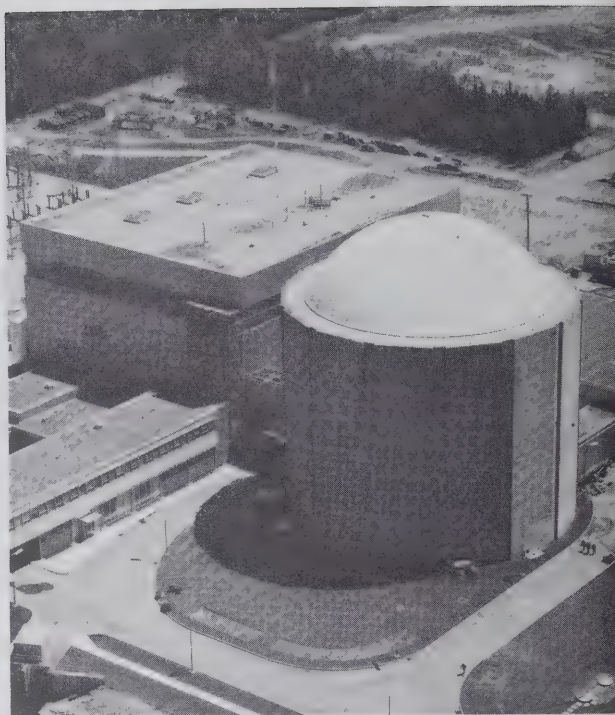
earlier, is scheduled for service in 1971 with 250,000 kw. of nuclear-electric capacity. The Gentilly Station will be located at Pointe aux Roches on the south shore of the St. Lawrence River between Bécancour and Gentilly, about 10 miles from Trois Rivières.

NUCLEAR RESEARCH IN CANADA

The principal nuclear research and development centres in Canada are AECL's Chalk River Nuclear Laboratories in Ontario and its Whiteshell Nuclear Research Establishment in Manitoba.

The five reactors at Chalk River - none of which is a power reactor - are used for fundamental research in physics, chemistry, biology and medicine and for engineering studies related to the development of economic nuclear power or the production of radio-active isotopes.

At Whiteshell, the principal activity is research in the development of economic nuclear power through studies in the fields of chemistry, chemical engineering, fuel development, metallurgy and engineering. The reactor at Whiteshell is an engineering test reactor for use in testing fuels, heat transfer materials and power reactor systems.



Reactor building at Douglas Point nuclear power station.

Electric Power Transmission

In the early days of the power industry in Canada, power systems were small and designed to supply specific local needs. The nature of the loads handled by these systems was not such as to warrant the expense of interconnection between systems. As time went on, however, the loads increased and changed in nature, the systems grew in size and improved techniques reduced transmission costs. The benefits of interconnection to integrate smaller power systems were re-appraised in the light of changing conditions and were found to offer advantages which far outweighed the costs.

The resulting amalgamation of the small systems into larger operating groups has gone on steadily and today most of the power produced in Canada comes from generating stations which are components of large, integrated and often interconnected power systems operated by power utilities and companies in the various provinces.

The integral role of power transmission in the process is obvious. In the days of small, self-contained power systems, it was not necessary to carry power over great distances and low operating voltages were adequate. With

the increase in transmission distances from the point of generation to the point of distribution and thence to the user, transmission methods had to be improved and operating voltages increased. Moreover, the growth in power demand, which was forcing power producers to consider the development of hydro-electric sites previously considered to be outside the economic transmission radius, added impetus to research in the field of extra-high-voltage (EHV) transmission.

This research has resulted in a successive stepping up of transmission voltages. In 1965, power was carried for the first time in Canada at 735-kv. when the transmission line between the Manicouagan-Outardes hydro complex in Québec and the cities of Québec and Montreal went into operation. This line is the first of three such lines, each 365 or 375 miles long, designed to supply load centres in Québec City and Montreal. Elsewhere in Canada, there are in operation or under construction, a number of transmission lines designed for operation at voltages of 500 kv. or more. In British Columbia, two 500-kv. lines connect the British Columbia Hydro and Power Authority system with the Bonneville Power Administration system in the State of Washington. The lines are being



Hydro poles at Seton Lake, British Columbia.

operated for the present at 230 kv. Power from the Peace River will be carried to the Lower Mainland of British Columbia via a 574-mile, 500-kv. line, at present under construction. The 435-mile EHV line from the hydro plants in the James Bay watershed to Toronto was completed in 1966. The northern section of the line, between the hydro plants and Sudbury is in operation at 500 kv.; the southern section, between Sudbury and Toronto, now in operation at 230 kv., will be converted to 500-kv. operation in 1967.

At present, power in Canada is transmitted

exclusively over ac (alternating current) lines. The advantages of dc (direct current) transmission for carrying power at high voltages over long distances are such that a number of Canadian power producers are expected to authorize the construction of dc lines within the next few years. One such line with a rating of ± 260 kv., is expected to go into service in 1968 to augment an existing ac line between Vancouver Island and the British Columbia mainland. Elsewhere in Canada, power may be carried over dc lines at even higher voltages from Nelson River hydro plants in Manitoba to the Winnipeg area and from Churchill Falls in Labrador to demand

*Transmission lines spanning
Laurentian Park in Quebec.*



centres in the Province of Québec.

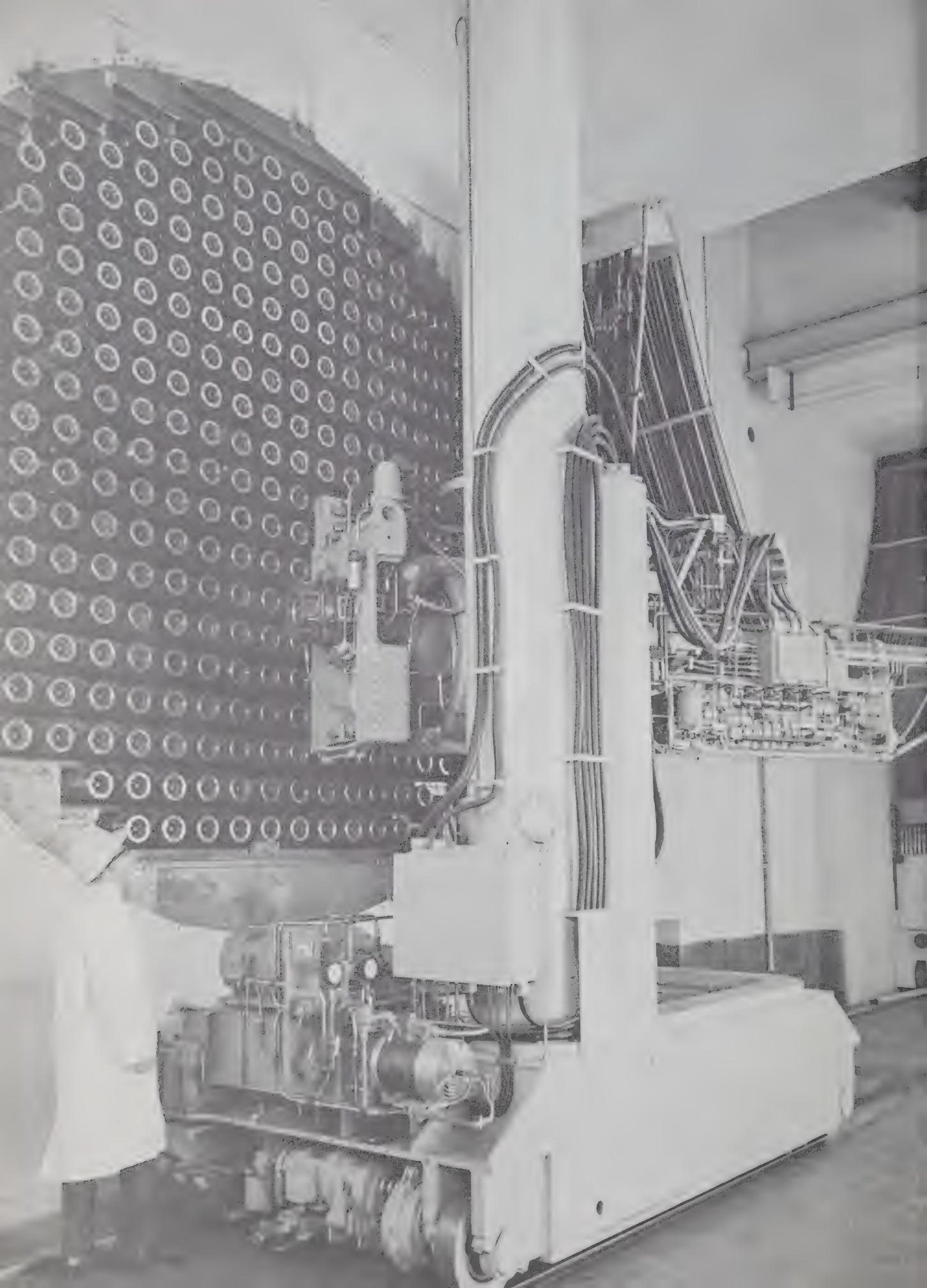
With the large increase in transmission distances, transmission costs will represent a much higher factor in the total cost of supplying power. The search for economies has led to many improvements not only in the materials used but also in tower erection and cable stringing methods. Guyed aluminum V-shaped or Y-shaped transmission towers are being used increasingly in place of self-supporting towers where the terrain is suitable, and erection costs are being lowered by using helicopters to transport tower sections to the site and for tower assembly. The use of helicopters for spraying for bush control on line right-of-way and for line inspection and maintenance is becoming more

widespread.

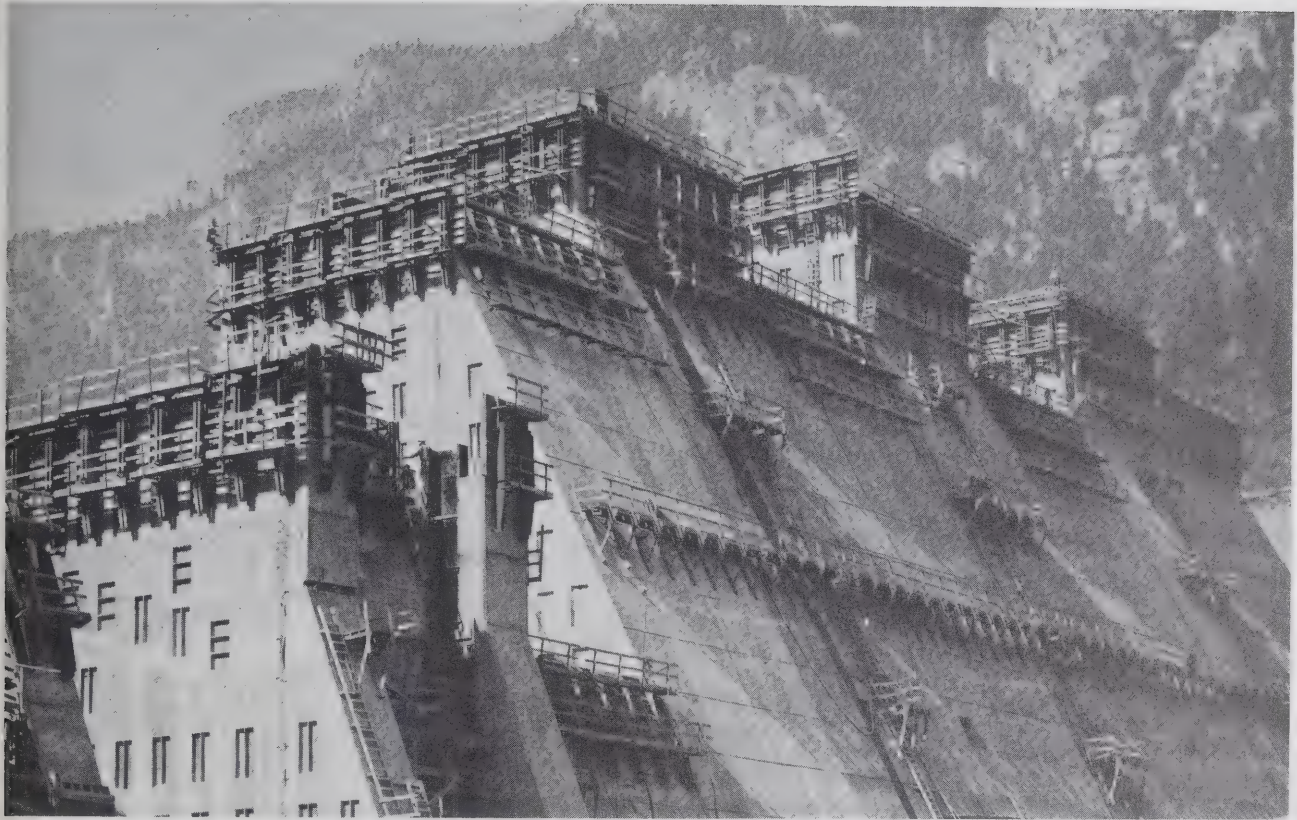
At present, interconnections of from 66 kv. to 230 kv. exist between systems in Alberta and British Columbia; between Saskatchewan, Manitoba and the northwestern Ontario system; between the interconnected northeastern and southern Ontario systems and Québec, and between New Brunswick and Nova Scotia.

There are important international interconnections between British Columbia and the State of Washington; Ontario and the State of Michigan; Ontario and the State of New York; Québec and the State of New York and between New Brunswick and the State of Maine.

*Loading the calandria at Douglas Point nuclear
power station.*



PROGRESS IN DEVELOPMENT - 1966



Construction of the Arrow Dam on the Columbia River in British Columbia emulates the pyramids of Egypt.

General Review

In 1966, Canada's electric generating capacity was raised by a total of 1,922,000 kilowatts. Thermal capacity, which includes nuclear electric, accounted for 1,059,000 kilowatts, or slightly more than half of the total; the remaining 863,000 kw. was installed in hydro plants. The new capacity placed in service in 1966 raised the total generating capacity in Canada to 31.3 million kilowatts, consisting of about 22.6 million kilowatts hydro and 8.7 million kilowatts thermal.

The year 1966 ranks third in terms of the amount of new electric generating capacity installed in one year in Canada; the years of greater installation were 1959 and 1965 when some 2,500,000 kw. and 2,200,000 kw. respectively, were placed in service.

In 1967, more than 2,350,000 kw. of new generating capacity is scheduled for initial operation, being divided approximately into 1,600,000 kw. thermal and 750,000 kw. hydro.

Including the capacity scheduled for 1967, Canada's power producers have under construction or have scheduled new capacity totalling 23.3 million kilowatts, 13.9 million kilowatts in hydro plants and 9.4 million kilowatts in thermal plants.

HYDRO-ELECTRIC PROJECTS

Development of hydro-electric generating capacity continued apace during 1966 with 862,650 kw. of new capacity being brought into service. Quebec led the field with 404,000 kw., followed in order of magnitude by Alberta, Ontario, British Columbia and Saskatchewan with new hydro capacities varying from 172,750 kw. to 77,400 kw.

Some 747,000 kw. of new capacity is scheduled for service in 1967; this figure will be far exceeded in 1968, however, when upwards

of 1.5 million kilowatts is expected to be placed in service.

Construction continued on several large projects during 1966, including the Portage Mountain Development on the Peace River in British Columbia, and the giant Manicouagan-Outardes hydro complex in Quebec. Also of importance to the Canadian economy were announcements heralding a start on the construction of two major projects, one on the Churchill River in Labrador and the other on the Nelson River in Manitoba.

In Quebec, construction at the Manicouagan-Outardes project in 1966 brought another 377,000 kw. of generating capacity into operation. Eventually, the installed capacity on the two rivers will be raised from the present 1,370,000 kw. to a total of almost six million kilowatts at nine sites.

At Portage Mountain on the Peace River, construction of the dam and powerhouse continued round the clock. The generating station is designed for a capacity of 2,270,000 kw. in ten units.

In 1966, agreement by Quebec Hydro to buy power from the Churchill Falls Development signalled the start of this huge project in the wilderness of Labrador. Utilizing a head of 1,040 feet, this imaginative project will ultimately realize more than 4,000,000 kw., and will rank as one of the largest hydro stations in the world.

Of importance to Manitoba was the announcement of a start on the development of Kettle Rapids on the Nelson River. About 1,000,000 kw. is to be installed at the site, with 400,000 kw. scheduled for service in 1971.

In Alberta, installation of the second unit in 1966 completed the Big Bend development on the Brazeau River. The latest unit, with a 250,000-hp. turbine driving a 161,500-kw. generator, is the largest hydro turbine-generator set in operation in Canada.

THERMAL ELECTRIC PROJECTS

During 1966, heavy demands upon Canada's thermal-electric generating facilities led to an increase of 1,059,000 kw. in total capacity, 200,000 kw. of which was installed in a nuclear power station.

The thermal capacity installed in 1966 marked the second consecutive year of record high installation. The trend is expected to continue into 1967 when an estimated 1,600,000 kw. to be installed will set another record for new thermal capacity installed in one year.

Almost every province in Canada has important thermal generating capacity under construction or planned for early development. The most extensive program, however, is that of Ontario which will account for more than 6,000,000 kw. of the total of 9,400,000 kw. currently under construction or proposed for construction in Canada.

CONVENTIONAL THERMAL POWER

The fifth 300,000-kw. steam unit in the Lakeview generating station near Toronto was the largest unit installed in Canada during 1966. The sixth and seventh units are scheduled for service in 1967 and an eighth unit in 1968, raising the ultimate station capacity to 2,400,000 kw.

In New Brunswick, a 110,000-kw. steam unit was brought into service in the Courtenay Bay thermal station in East Saint John. The station's current generating capacity of 172,600 kw. makes it the largest thermal station in the Atlantic Provinces.

A 75,000-kw. unit was installed at the municipal steam plant in the city of Edmonton, raising the plant to full capacity at 405,000 kw.

Significant because of their proposed size are two steam plants; the Lambton thermal station under construction near Sarnia, Ontario, and another, as yet unnamed, which is proposed for construction in the Niagara region. These two plants will consist of four 500,000-kw. units each, making a combined total of 4,000,000 kw.

NUCLEAR POWER STATIONS

Canada's first full-scale nuclear power station, the 200,000-kw. Douglas Point Nuclear Power Station on the eastern shore of Lake Huron, between Kincardine and Port Elgin, began initial service at the end of 1966.

Preceding Douglas Point was the 20,000-kw. Nuclear Power Demonstration Plant (NPD) which began service in 1962 at Rolphton, Ontario. Operation of the NPD station over the past several years demonstrated the soundness of the Canadian type of nuclear power reactor and helped to establish the design for the larger Douglas Point station and for two other stations which are now under construction in Ontario and Quebec.

The larger of the nuclear stations under construction is at Pickering, Ontario, on the shore of Lake Ontario, just east of Toronto. Initially, the station will consist of two 540,000-kw. units, one to commence operation in

each of the years 1971 and 1972. The second station, located in Quebec on the south shore of the St. Lawrence River between Gentilly and Bécancour, is the Gentilly Nuclear Power Station. The Gentilly station will have an output of 250,000 kw. and is expected to be placed in service in 1971.

ELECTRIC POWER TRANSMISSION

Continuing research into electric power transmission techniques has led to a progressive stepping up of voltages to the current 735 kv. which was realized in Quebec in 1965.

At present, power transmission in Canada is achieved solely via alternating current (ac) lines. Direct current (dc) transmission lines have been under consideration for some time but it was not until 1966 that dc line construction

actually got under way in Canada. By 1968, Canada's first dc line, with a rating of ± 260 kv., will increase the power supply available to Vancouver Island by augmenting an existing ac transmission line interconnection with the British Columbia mainland. Elsewhere in Canada, dc lines operating at ± 450 kv. are proposed for transmitting Nelson River power to the Winnipeg area, a distance of some 600 miles. In Labrador, transmission of electric energy from Churchill Falls will be either at ± 500 kv. dc or 735 kv. ac.

The expanding technology of high voltage transmission techniques has brought many remote hydro sites within economic transmission distance of load centres and has engendered interest in the possibilities of a national power grid interconnecting major systems supplying the individual provinces. The Government of Canada is co-operating with provincial authorities in carrying out studies to determine the physical and economic possibilities of establishing such a grid.

Progress in the Provinces

British Columbia

A total of 114,520 kw. of generating capacity was installed during 1966 in British Columbia, 79,060 kw. in hydro plants and 35,460 kw. in thermal plants. Scheduled for service in 1967 is a further 304,100 kw., consisting of 198,500 kw. thermal and 105,600 kw. hydro. Installations scheduled beyond 1967 will yield almost two and one-half million kilowatts of new capacity, most of which will be hydro.

Industrial companies have accounted for all of the capacity brought into service in 1966 and almost half of the capacity scheduled for service in 1967. It should be emphasized, however, that most of the electric power development going on in the Province is being carried out by the provincial Power Authority.

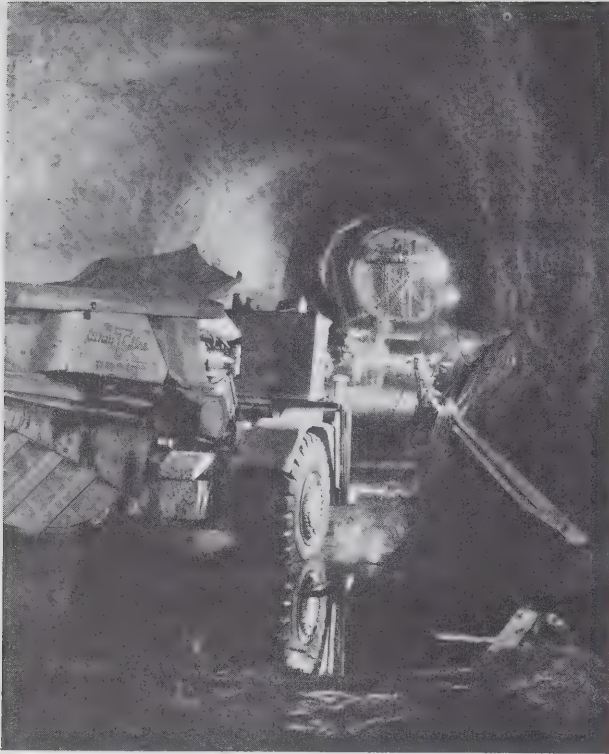
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

Hydro-Electric Projects: Construction of the giant Portage Mountain hydro plant on the Peace River near Hudson Hope in north central British Columbia is continuing ahead of schedule. The 2,270,000-kw. capacity for which the Portage Mountain plant is designed represents almost all of the two and one-half million kilowatts scheduled for service after 1967. The first three of this station's ten 227,000-kw. generating units will be in service by the fall of 1968.

The dam at Portage Mountain will be 600 feet high with a crest length of 6,700 feet, and will contain 60 million cubic yards of material. The reservoir created by the dam will have a

Artist's conception of Portage Mountain dam under construction on the Peace River in British Columbia.





A large dump truck manoeuvres inside a giant penstock at the Portage Mountain dam in British Columbia.

surface area of 680 square miles and a volume of 62 million acre-feet. By the end of 1966, approximately 78 per cent of the dam was in place, with the crest 450 feet above bedrock. Excavation for the power intakes, penstocks and low-voltage lead shafts was essentially completed and good progress was made on excavation of the underground powerhouse and spillway.

Construction of the 574-mile, 500-kv. transmission line from Portage Mountain to Vancouver is progressing favourably; the 205-mile section between Kelly Lake and Prince George was completed during 1966 and already is in service at a lower voltage to strengthen the electrical grid to the central interior region.

COLUMBIA RIVER

In September 1964, the Governments of Canada and the United States exchanged instruments of ratification for the Columbia River Treaty and Protocol, clearing the way for construction of this ambitious international power and flood control project. Under the Treaty, Canada has received payment for one-half of the power benefits accruing in the United States from the regulation of 15.5 million acre-feet of water which will be stored behind the Duncan, Arrow and Mica Dams. In addition, Canada will receive payment of one-half of the

estimated flood damage prevented in the United States by the operation of the dams for flood control.

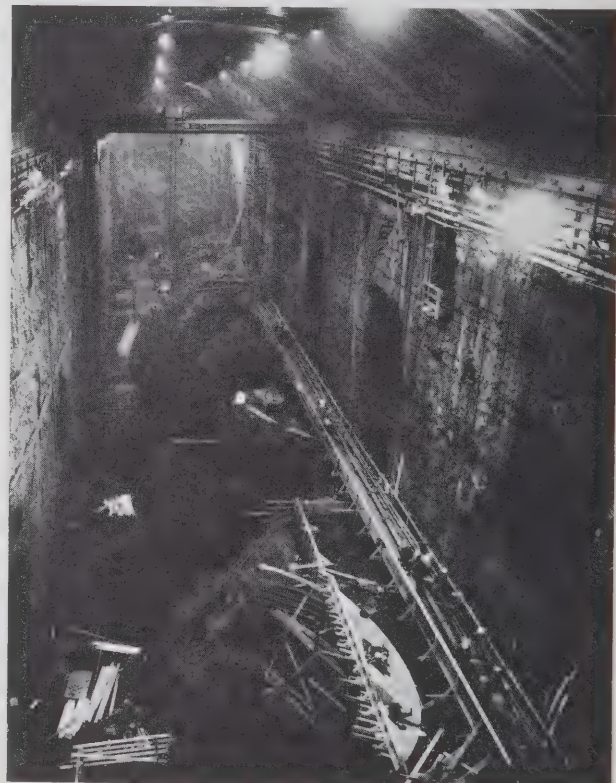
The Treaty requires that the Duncan Dam be operational by April 1, 1968, the Arrow Dam by April 1, 1969, and the Mica Dam by April 1, 1973.

The construction program at Duncan is progressing ahead of schedule. Approximately 5.5 million cubic yards of the ultimate 6.4 million cubic yards of material for the 120-foot high earth-filled Duncan Dam has been placed.

The earth-filled Arrow Dam, 190 feet high and with a crest length of about 2,850 feet, will impound 7.1 million acre-feet of water. Construction of the cofferdam to enclose the navigation lock, spillway gates and low-level releases was completed in 1966 and construction of the concrete portion of the dam is well advanced.

Mica Dam, highest of the three dams with a crest at 645 feet above bedrock, will provide 19 million acre-feet of storage in a reservoir 90 miles long. Construction of two 45-foot diameter diversion tunnels each about 3,200 feet long, to carry the river past the construction site will be completed before the end of 1967.

Four hundred feet below ground, work continues in the cavernous Portage Mountain dam powerhouse site.



Fabrication of intake gates and their operating mechanisms is under way, and highway relocation is progressing on schedule.

Completion of the storage reservoirs in Canada will facilitate development of several million kilowatts of hydro-electric capacity in the Canadian portion of the basin.

Thermal-Electric Projects: In the thermal-electric field, installation of the fourth 162,000-kw. unit at Burrard generating station is progressing favourably. Scheduled for operation in 1967, the new unit will bring the total installed capacity at Burrard to 648,000 kw. in four units. A fifth 162,000-kw. unit is scheduled for service late in 1968. The ultimate capacity of this station is 972,000 kw. in six units.

Transmission Systems: A long-term plan to extend the power supply from the mainland to Vancouver Island using high-voltage, direct current, submarine-cable power transmission lines is moving ahead. Late in 1966, terminal equipment was arriving and being installed. The submarine cables are being manufactured and are scheduled to be in operation in 1968.

The 287-kv. line from Kitimat to Prince Rupert is nearing completion. This transmission connection is designed to augment locally-generated power supplies in the Prince Rupert area with power from the Aluminum Company of Canada's Kemano hydro plant. Ultimately, the Prince Rupert area and the Skeena and Bulkley Valleys will be fully integrated with the provincial grid at Prince George. For this purpose, construction of a 500-kv. line westward from Prince George to Glenannan, east to Burns Lake, got under way in 1966. During 1966, 138- and 60-kv. lines were completed at several locations in the province and construction of two 230-kv. lines in the lower mainland and one 138-kv. line on the north coastal region was begun.

To serve the continuing demand for power, new and increased transformer substation facilities were added in Vancouver, Prince George, Prince Rupert, Kamloops, Vernon and Vancouver Island, and at various other points throughout the Province. Over 700,000 kva. of transformer capacity was installed at new and existing substations during 1966.

COMINCO LTD.

Installation of the fourth and final generating unit at the Company's Waneta hydro station on the Pend d'Oreille River was completed in 1966. The 76,000-kw. unit increased the generating capacity at Waneta to 292,000 kw. Construction of a fourth 60-kv. line from the

Waneta station to Trail was completed during the year.

The fourth and final generating unit at Brilliant hydro station on the Kootenay River is scheduled for installation in 1968. This 27,200-kw. unit will bring the generating capacity at Brilliant to 108,800 kw.

The Company is planning to construct a second transmission line from Nelson to Kimberley. This line will operate at 230 kv.

COLUMBIA CELLULOSE COMPANY LIMITED

In 1966 the Company placed in operation a 34,560-kw. steam turbo-generator at its new 750-ton-per-day bleached-kraft mill on Watson Island near Prince Rupert. Power from the unit is used in the mill and transmission lines are not required.

A transformer substation is under construction by the Company on Watson Island to receive a maximum of 20,000 kva. from the British Columbia Hydro and Power Authority.

MacMILLAN BLOEDEL LIMITED

The Company is installing a 35,000-kw. steam turbo-generator at the Powell River plant. The new unit is scheduled for operation in April 1967.

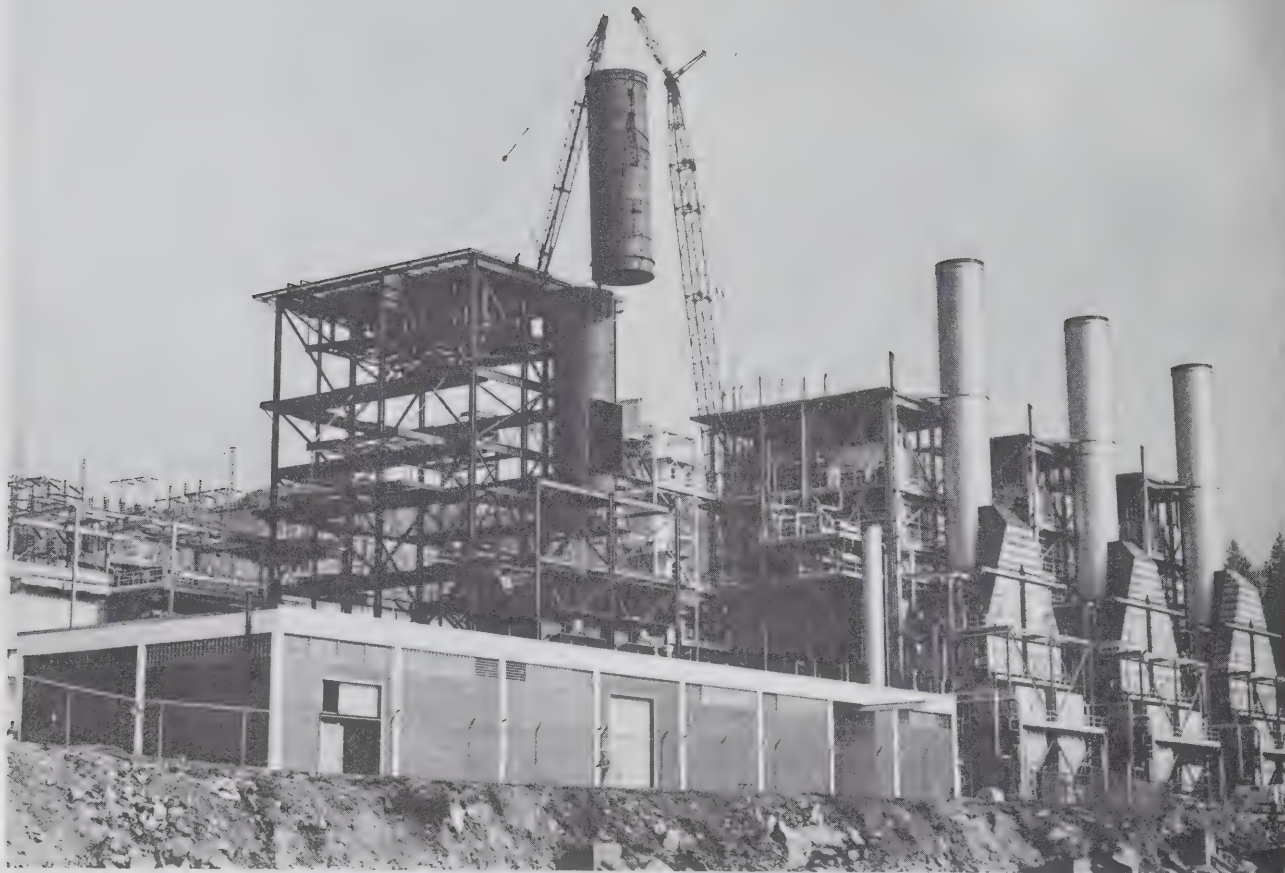
In 1966, two facilities went into service at Powell River: a 3,000-foot, 132-kv. transmission line and a 70,000-kva. substation at the Powell River plant. The new substation will permit a further capacity increase by the installation of additional transformers and switchgear.

CROWN ZELLERBACH CANADA LIMITED

The Company is currently installing three turbines with a total capacity of 18,000 hp. at the Ocean Falls hydro plant on the Link River. These turbines will replace six 2,000-hp. turbines which have been in operation for about fifty years. The use of these turbines is not for hydro-electric power generation but for direct driving of groundwood pulping stones used for the production of pulp.

WESTERN MINES LIMITED

During 1966 the Company completed a hydro-electric station on Tennent Creek on Vancouver Island. The installation consists of a 4,500-hp. turbine and a 3,060-kw. generator. The station supplies power to the Company's ore concentration plant.



Expanding the Burrard thermal plant near Vancouver, British Columbia, to accommodate a fourth 150,000 kw. unit.

CASSIAR ASBESTOS CORPORATION LIMITED

The Company installed a 900-kw. unit at its Cassiar diesel plant, raising to 4,573 kw. the total installed capacity at the plant.

ALUMINUM COMPANY OF CANADA LIMITED

Construction of the eighth 105,600-kw. unit at the Company's Kemano hydro station continued during 1966. The unit is scheduled for service in January 1967, raising to 812,800 kw. the total capacity of the station.

NORTHWOOD PULP LIMITED

The Company is installing a single-unit

1,500-kw. steam plant at its Prince George mill to maintain basic loads in case of power interruptions. The unit is scheduled for service in 1967.

WEST KOOTENAY POWER AND LIGHT COMPANY LIMITED

Terminal facilities for the 170-kv. line from Trail to Penticton were installed and the line was placed in service in October.

A 23-mile, 170-kv. line from Penticton to Okanagan Mission also was placed in operation, initially at 60 kv.

Construction of a 20,000 kva. substation was completed in 1966 at Coffee Creek to firm up power supply to Kaslo.

Alberta

Alberta's total installed electric generating capacity increased by 303,650 kw. in 1966. Hydro stations accounted for 172,750 kw. and thermal for 130,900 kw. Estimates for 1967 point to the installation of 330,500 kw. of new capacity, all of which will be thermal. Scheduled for installation after 1967 is a total of 780,000 kw. of thermal capacity.

CALGARY POWER LTD.

The second generating unit at Calgary Power's Big Bend hydro development on the Brazeau River went into service in 1966. The unit, consisting of a 161,500-kw. generator driven by a 250,000-hp. turbine, has the highest rating of any hydro unit in service in Canada at this time. The total capacity of the Big Bend plant is 305,500 kw.

At Big Bend, water is transferred from the storage reservoir to the powerhouse via a 12-mile canal. A pumping-generating plant is incorporated at the outlet of the storage reservoir. Under operating conditions, when the reservoir storage level is higher than the water level in the canal, the pumping-generating units

can function as generators to produce power; when the reservoir level is lower than the canal level, the units operate as pumps to raise water to the canal.

At the pumping-generating station an 11,250-kw. unit was installed in 1966. The station now has a total generating capacity of 20,970 kw. in two units.

Work continues on the extension to the Company's Wabamum thermal station. The 282,000 kw. in service at Wabamum will be boosted to 582,000 kw. in the fall of 1967 when a 300,000-kw. coal-burning steam unit is placed in service.

Another 300,000-kw. thermal unit is under consideration for commissioning in 1970 in the Wabamum area.

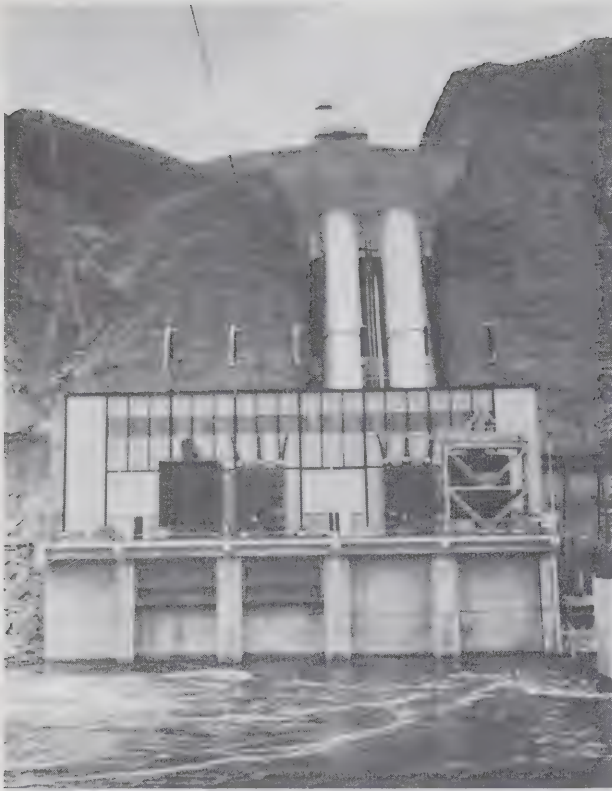
The Company's transmission network was extended during 1966 by 220 circuit miles of new line to bring the total network mileage to 6,336 miles.

CANADIAN UTILITIES LIMITED

A 20,000-kw. gas turbine unit was installed at Simonette in 1966. This plant,



View of Brazeau Dam on the Brazeau River



*Big Bend hydro station on the Brazeau River
in Alberta.*

which uses sour gas from the surrounding oil fields as fuel, is connected to the provincial transmission network by 22 miles of 138-kv. transmission line.

Excavation for a 150,000-kw. coal-fired, steam turbo-generator, due to come into operation in June 1969, has been completed. The unit is being installed in a new plant adjacent to the Battle River thermal station near Forestburg.

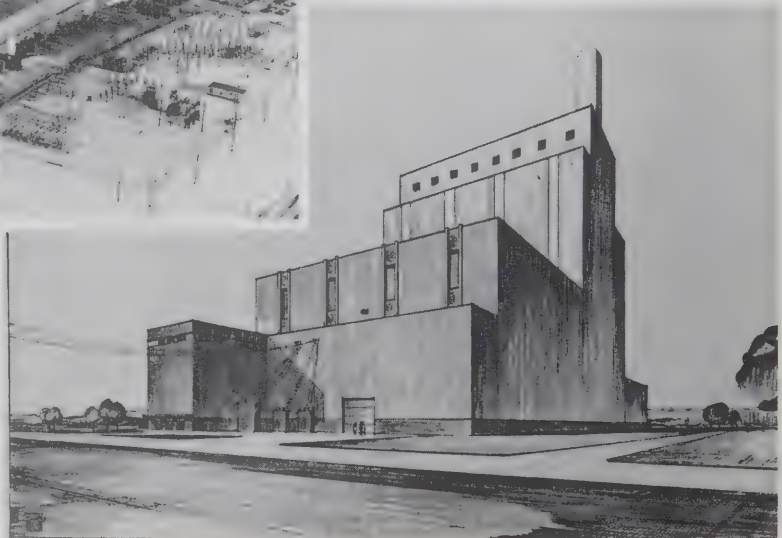
Although the Company does not operate hydro-electric generating facilities, a study of the hydro potential of the Smoky River in the Grande Prairie area has been carried out and eight sites are under consideration for possible development. The capacities that could be installed at the eight sites vary from 60,000 kw. at the confluence of the Smoky and Kekwa Rivers to 620,000 kw. at Mile 283 from Mount Robson, near the town of Nampa.

Effective January 1, 1967, ownership and operation of the thermal plant and facilities of the Fort McMurray Power Company Limited in Fort McMurray were transferred to Canadian Utilities Limited. During 1966, the installed capacity of the plant was raised to 4,475 kw. following the installation of two 1,200-kw. units and two 500-kw. units. A 100-kw. unit was removed from service.



Wabamun steam plant in Alberta.

*Artist's conception of Sundance
thermal plant under construction
near Wabamun, Alberta.*



The Company's transmission line mileage was increased in 1966 by a total of 131 miles, consisting of 42 miles at 138 kv. and 89 miles at 72 kv.

Three new transformer stations with capacities of 16,667 kva., 6,000 kva. and 3,000 kva. were installed in 1966 at Simonette, Kinuso and Radway respectively.

CITY OF EDMONTON

In 1966, a 75,000-kw. gas-fired, steam turbo-generator was commissioned, bringing to completion the Edmonton thermal plant. The new unit increased the plant's generating capacity to 405,000 kw.

The city plans to build a new plant consisting of two 165,000-kw. gas-fired units; the first unit is scheduled for service in 1970 and the second unit in 1973.

Construction of the city's Rosssdale bulk substation was completed in November. A smaller distribution substation in the Beverley area was removed from service.

CANADIAN CHEMICAL COMPANY LIMITED

The Company placed a 4,000-kw. unit in service at its Clover Bar thermal station in Edmonton in 1966, raising to 22,000 kw. the total generating capacity at the station.

GREAT CANADIAN OIL SANDS LIMITED

At Fort McMurray, the Company installed the first of two steam turbo-generator units each with a capacity of 30,500 kw. The second unit is scheduled for operation in 1967.

NORTHLAND UTILITIES

The Company removed two 1,200-kw. units from its Fairview diesel station, reducing the total installed capacity to 9,000 kw. At High Level, a 500-kw. unit was installed, raising the station capacity to 2,350 kw.

During the year, the Company completed the construction of 70 miles of 138-kv. line for initial operation at 72 kv. and 40 miles of 72-kv. line.

Saskatchewan

Saskatchewan's electric power generating

capacity increased by 92,800 kw. in 1966. Hydro installation accounted for 77,400 kw. and thermal installation for 15,400 kw. There is no capacity scheduled for initial service in 1967; however, 186,600 kw. of hydro capacity and 330,800 kw. of thermal capacity are scheduled for installation in subsequent years.

SASKATCHEWAN POWER CORPORATION

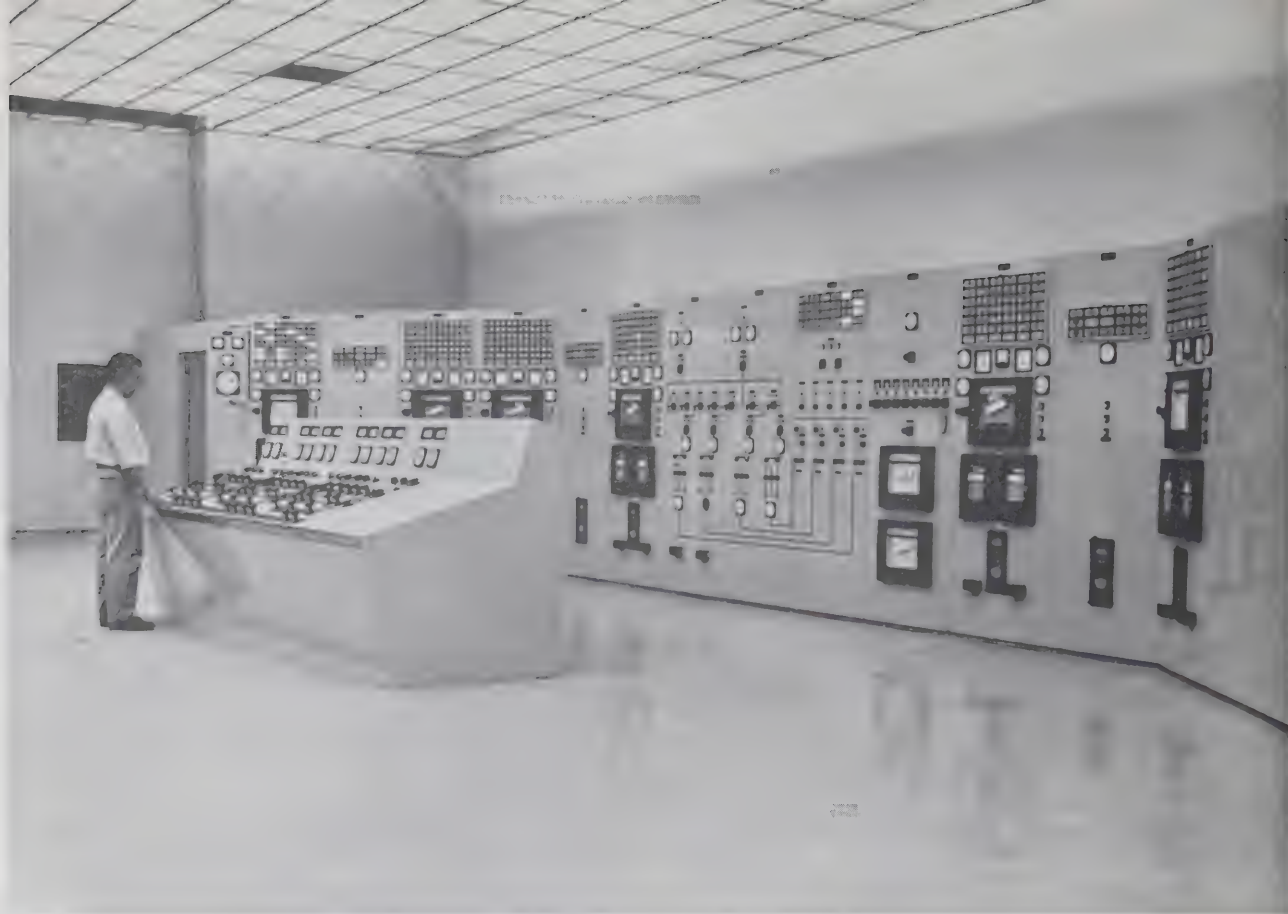
The full complement of eight units at the Squaw Rapids hydro plant on the Saskatchewan River was completed in 1966 with the installation of units No. 7 and No. 8. These two units, each rated at 38,700 kw., boost the station capacity to 278,400 kw.

Construction of the South Saskatchewan River Project near Outlook continues. The dam and reservoir at the project are being built by the Prairie Farm Rehabilitation Administration for irrigation purposes, but hydro-electric generating facilities will be incorporated. The Saskatchewan Power Corporation will install the generating facilities at the Coteau Creek site. First power is expected by September 1968 when one of the three 62,200-kw. units goes into service. The other two units of the same size will be commissioned in October and December, 1968.

The first of three units at the Success

Spillway at Squaw Rapids hydro station on the Saskatchewan River in Saskatchewan.





*Squaw Rapids hydro station on the Saskatchewan River in Saskatchewan. (above) Powerhouse control room
(below) Interior of power plant showing enclosed generators.*





*Boundary Dam thermal plant at Estevan,
Saskatchewan.*

thermal plant near Swift Current was installed in 1966. The unit has a generator rated at 15,400 kw. The new plant will augment the Corporation's 14,550-kw. thermal plant at Swift Current.

Two 150,000-kw. steam turbines are scheduled for installation at the Boundary Dam thermal station at Estevan. These units, scheduled for commissioning in 1969 and 1970 respectively, will be fired by lignite coal from the Estevan coal fields.

During 1966, transmission lines completed or under construction totalled 191 miles. A 138-kv. line, 37 miles long, links Beatty to Tisdale; the other lines built during the year operate at 72 kv.

The expansion of the transformer substation at Squaw Rapids and at several other locations led to a total capacity increase of 277,000 kva.

Manitoba

Manitoba's electric generating capacity remained unchanged in 1966. Installation in 1967 consists of 26,000 kw. of thermal capacity. Scheduled for installation subsequent to 1967 is a total of 1,109,250 kw. of hydro capacity and 105,000 kw. of thermal capacity.

MANITOBA HYDRO

Manitoba Hydro is installing the fourth and final unit at Grand Rapids hydro station on the Saskatchewan River. This unit will have a capacity of 109,250 kw. and is scheduled for completion in 1968.

Construction of the 168,750-kw. Kelsey hydro plant in the early 1960's was a first step in the development of the Nelson River's considerable power potential. The year 1966 saw a start to a co-operative scheme, involving the Governments of Manitoba and Canada, to advance the development of the Nelson River. The scheme, known as "Phase One Development of the Nelson River," will comprise four distinct projects.

The first project entails construction of a ten-unit generating station at Kettle Rapids on the Nelson River near Gillam. The Kettle Rapids plant will house approximately one million kilowatts of generating capacity, 400,000 kw. of which is expected to be in service by September 1971.

The second and third projects are designed to augment and regulate the natural flow of the Nelson River to increase the potential at power sites on the river. To provide the additional flow, water from the Churchill River will be diverted via the Rat and Burntwood Rivers to enter the Nelson River immediately downstream from the Kelsey plant. Flow regulation will be carried out by controlling the outflow of Lake Winnipeg by means of a dam at Warren Landing.

The fourth project provides for the transmission of power from Nelson River plants

to demand centres in southern Manitoba.

Construction work under way at present includes the installation of cofferdams, access roads, air strips, construction camps and associated services for the Kettle Rapids station. In conjunction with these installations, a program of sub-surface investigations, tower anchor tests, aerial photography and hydrometric, topographic and ice surveys is going ahead.

To help meet the power demand forecast for the period prior to the date of completion of the Kettle Rapids project, the Brandon thermal station is to be expanded to house a 105,000-kw.,

to Soab Lake initially will carry Nelson River power to new mining developments being established at Soab Lake and Birchtree. This link, involving 47 miles of 230-kv. transmission line went into operation in 1966. The southern stage from Grand Rapids is being pushed north-westward 161 miles to Soab Lake and is scheduled for operation in November 1967. Completion of the two stages will increase the power available to the region and provide an alternative source of power.

An additional line from Grand Rapids generating station to the southern system will be necessary to maintain stability when the fourth unit at Grand Rapids goes into operation.



Hydro station at Grand Rapids on the Saskatchewan River in Manitoba.

lignite-fired, steam generator unit. Installation of this unit, scheduled for November 1970, will bring the total capacity of the Brandon station to 237,000 kw. in five units.

The capacity of the Selkirk thermal station also is to be expanded, the addition to consist of two 13,000-kw. gas turbine units. In-service date for the new units is June 1967. The existing capacity at Selkirk is 132,000 kw. in two units.

Increased demand for power at Thompson and at associated mining developments has made it necessary to provide a 230-kv. transmission link with the southern system via Grand Rapids. The northern stage of the line from Thompson

The additional line, which will operate at 230 kv., will be routed west from Grand Rapids to Overflowing River and south through Minitonas to Dauphin-Vermilion, a total distance of 246 miles. The scheduled in-service date is August 1968.

In addition to the 230-kv. lines referred to, Manitoba Hydro is building a total of 267 miles of transmission line with voltages varying between 60 kv. and 230 kv.

Manitoba Hydro's extensive program of system interconnection continued throughout 1966. During the year, nine new transformer substations were constructed and ten substations were modified. Station construction and conversion resulted in a net increase of 299,979 kva.

Ontario

Ontario's massive total of electric power generating capacity was increased during 1966 by 818,640 kw. of new capacity. Thermal generating capacity accounted for 689,240 kw. and hydro for 129,400 kw. Forecasts for 1967 indicate that 644,500 kw. of new thermal capacity and 139,400 kw. of new hydro capacity will go into service.

The continuing trend towards thermal installation in Ontario is evident in the installation schedule for after 1967 which includes 5,400,000 kw. of thermal capacity compared to

River. The conventional thermal plants involved in the 1966 program were the Lakeview, Richard L. Hearn and A. W. Manby stations near Toronto, the Lambton and Sarnia-Scott stations near Sarnia, and the Detweiler station near Kitchener; the nuclear-electric stations were the Douglas Point station on the shore of Lake Huron and the Pickering station near Toronto.

Hydro-Electric Development: Kipling Generating Station was placed in service in the summer of 1966. The station's total capacity is 125,400 kw. in two units. The turbines are rated at 94,000 hp. each. Kipling is the last of three stations recently constructed on the Lower Mattagami River in the Moose River



Kipling hydro station on the Mattagami River in northern Ontario.

slightly more than 360,000 kw. of hydro capacity.

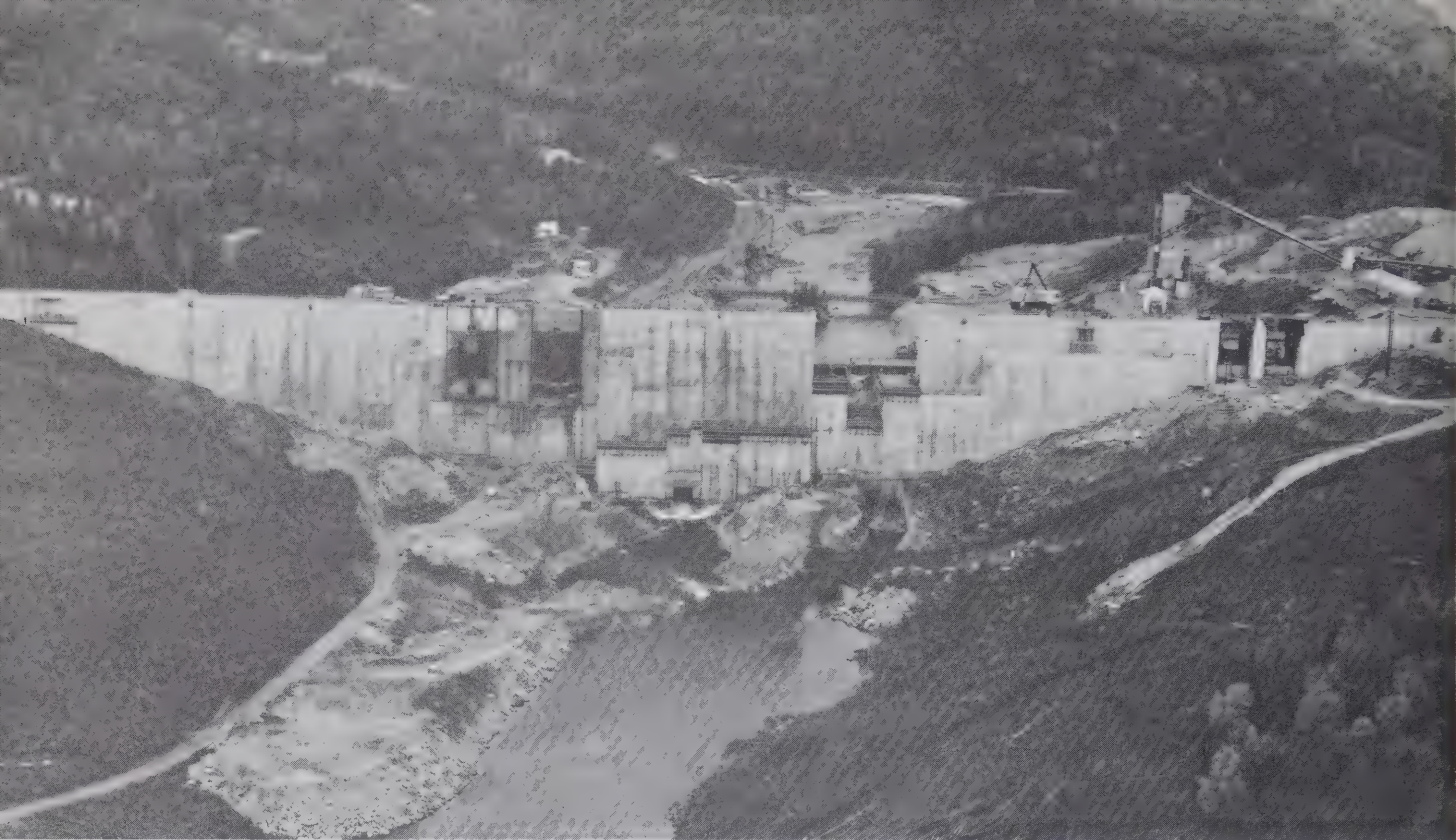
watershed.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO

During 1966, Ontario Hydro's electric development program involved construction work on five hydro stations, and construction either was in progress or plans were well advanced for installations at six conventional thermal stations and two nuclear-electric plants.

The hydro stations under construction during 1966 were Kipling station on the Mattagami River, Mountain Chute, Barrett Chute and Stewartville stations on the Madawaska River and Aubrey Falls station on the Mississagi

At the Mountain Chute hydro development on the Madawaska River, clearing of the head-pond area is almost finished and construction of the powerhouse substructure and the major part of the dam is completed; work is proceeding on the powerhouse superstructure and penstocks. The Mountain Chute plant will go into service in the fall of 1967 and will make available a total generating capacity of 139,400 kw. in two units. The turbines will be rated at 112,000 hp. each. At Barrett Chute, further downstream, the present powerhouse is being extended to house two additional units with generators rated at 55,800 kw. and turbines rated at 84,000 hp. Excavation is under way for the powerhouse and



Mountain Chute hydro station under construction on the Madawaska River in Ontario.

headworks extensions, and two power-operated, remotely-controlled gates are being installed to control the flow in the main dam sluiceway. Stewartville hydro station, on the Madawaska River downstream from Barrett Chute, is being extended to house two additional units to consist of 45,900-kw. generators and 68,000 hp. turbines. Concrete removal for the new intakes is proceeding and the powerhouse cofferdam is under construction. The additional units will increase the generating capacity at Stewartville to 153,000 kw.

At the site of the Aubrey Falls hydro development on the Mississagi River northeast of Sault Ste. Marie, a camp for three hundred and fifty men is under construction and accommodation for about one hundred and twenty-five families is to be provided at a new townsite which will also serve future development projects on the Mississagi River. Plans for headpond clearing at Aubrey Falls and for the purchase of the hydraulic turbines are proceeding. The station is designed for an installation of two 80,000-kw. generators driven by turbines rated at 110,000 hp.; the in-service date is late 1969.

Extensive investigations have been carried out to determine the feasibility of further development of the hydro potential of the Mississagi River; the locations being considered include the Gros Cap site and the existing George W. Rayner development. Feasibility

studies have been carried out for a two-stage power and storage development on the Montreal River. Further investigations are planned for these two rivers and for the White and Little Jackfish Rivers.

Thermal-Electric Generating Stations: At the Lakeview Generating Station on the shore of Lake Ontario west of Metropolitan Toronto, the fifth 300,000-kw. unit was in service at the end of the year, bringing the station's total installed capacity to 1,500,000 kw. During 1966, the powerhouse building was completed, a 238-kv. ring-bus installed in the switchyard, the dock lengthened by 200 feet to accommodate the larger coal vessels, and a second conveyor-belt completed. This conveyor has the capacity to carry 3,000 tons of coal per hour from the dock to the storage pile. Lakeview is scheduled to be completely developed in 1968 with a total installed capacity of 2,400,000 kw.

By the end of 1966, all major electrical and mechanical equipment was on order for Lambton Generating Station. Foundations for the powerhouse, administration building, and coal-conveying system structures were completed. Structural steel for the first of four 500,000-kw units and the chimney for the first two units were substantially complete. Footings were completed for the 230-kv. switchyard and work on the intake and outflow structures was finished. The four units at Lambton are

scheduled to come into service at the rate of one a year from 1968 to 1971.

Site investigations are being carried out for a proposed coal-fired thermal-electric generating station to be located on the north shore of Lake Erie in the Commission's Niagara Region. The tentative schedule for the new station calls for the installation of four 500,000-kw. units between 1972 and 1977.

A program is under way for the installation of a number of combustion-turbine generating units with capacities ranging from 7,500 kw. to over 16,000 kw. at several existing generating and transformer stations. These units, installed both in the East and in the West Systems, will supply additional power which may be used either for peak or base-load as operating conditions may require. At the thermal-electric generating stations, the units will be directly connected to the station-service bus. The quick-starting ability of these units will be used to good advantage for the restoration of station service in the event of a power interruption. During 1966, a total of 189,240 kw. of combustion-turbine capacity was installed as follows: Detweiler (Kitchener), 65,280 kw. in four units; Sarnia-Scott, 32,640 kw. in two units; Lakeview, 30,000 kw. in four units; R. L. Hearn, 30,000 kw. in four units; A. W. Manby, 16,320 kw., single unit; Lambton, 15,000 kw. in two units.

Nuclear-Electric Generating Stations: At

Douglas Point Nuclear Power Station, installation of the CANDU reactor continued throughout much of 1966 and the single 200,000-kw. unit began producing power for the first time late in 1966.

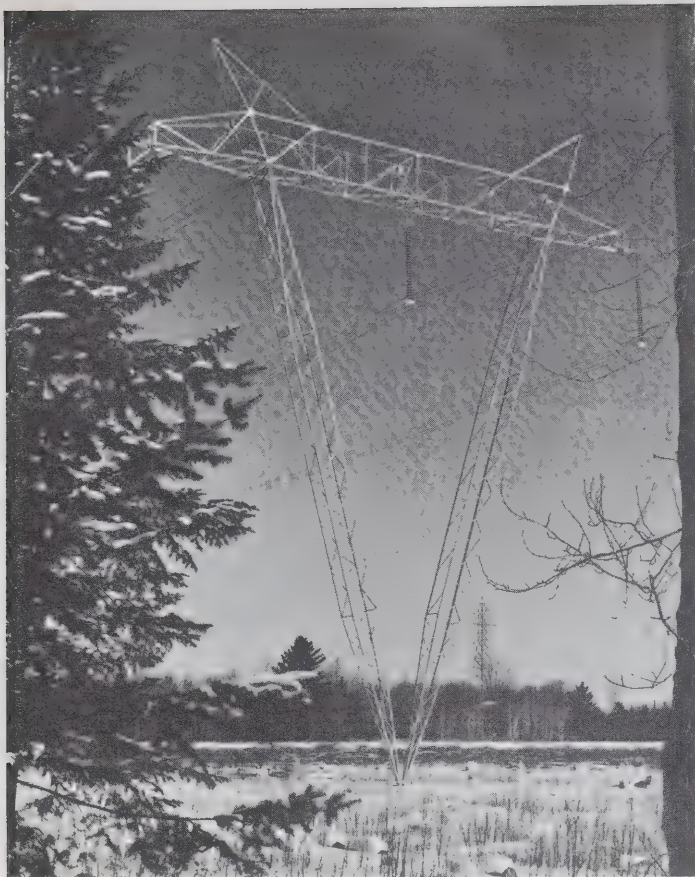
The Douglas Point Station is a co-operative enterprise of Ontario Hydro and Atomic Energy of Canada Limited (AECL). Ontario Hydro built the station as prime contractor for AECL and will purchase the power generated. When the required operating conditions have been satisfactorily met, Ontario Hydro will purchase the station.

At the Pickering Nuclear Station site, east of Metropolitan Toronto, construction is well under way. By the end of the year, most contracts for major equipment and construction for the program as at present scheduled had been awarded. Excavation and pile foundations for most of the main buildings were nearly complete, and concreting for the reactor building and for the intake ducts was well advanced.

Pickering Station, designed for an installation of two 540,000-kw. units, is being financed jointly by Ontario Hydro and the Governments of Ontario and Canada. It is being built by Ontario Hydro with AECL co-operating in the design of the components of the units associated with the nuclear reactors. In-service dates for the units are 1970 and 1971.



Pickering nuclear power station under construction on the shore of Lake Ontario near Toronto.



V-shaped towers designed to transmit power at 500 kv. from northern Ontario sites to user areas in southern Ontario.

Electric Power Transmission: The erection during 1966 of 34 miles of 500-kv. line between Kleinburg and Barrie completed the extra-high-voltage transmission link between Pinard Transformer Station, which collects power from the

hydro stations in the Moose River watershed, and Kleinburg Transformer Station, near Metropolitan Toronto. The total length of the line is 435 miles. The northern section of the system, between Pinard Transformer Station and Hammer Transformer Station near Sudbury, was placed in operation at 230 kv. in 1965 and was converted to 500 kv. late in 1966. The southern section, from Sudbury to Toronto, now in operation at 230 kv., is to be converted to 500 kv. in 1967 when the installation of the necessary transformer facilities is completed.

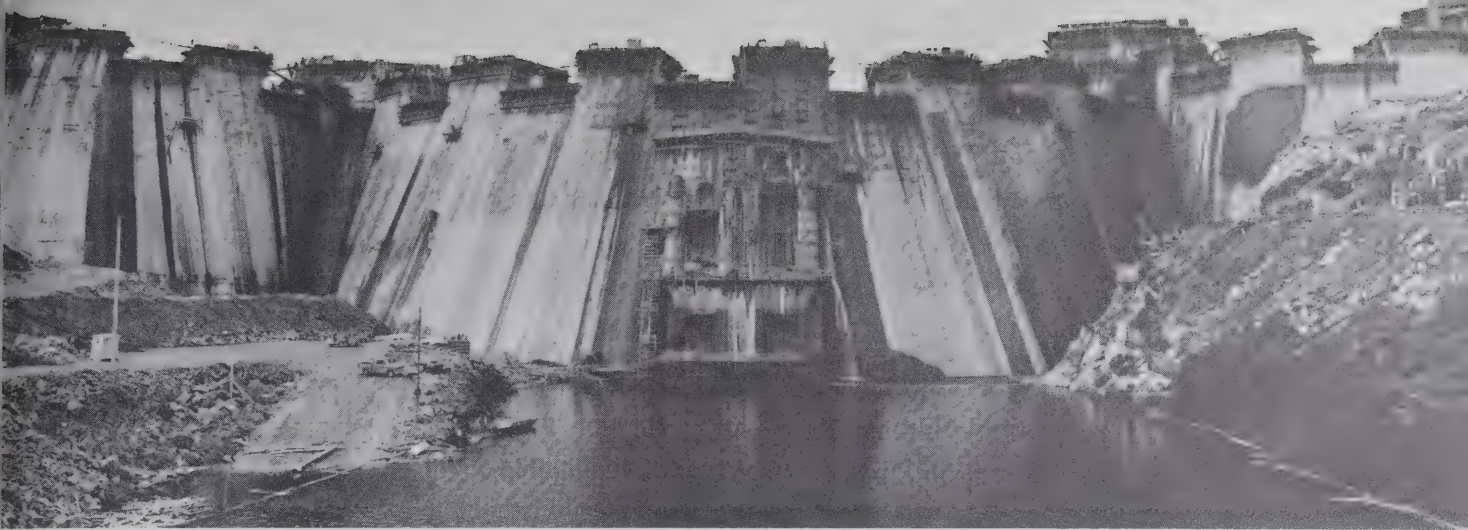
One other major transmission project completed during 1966 was the installation of the Canadian part of a new international interconnection between Ontario Hydro's East System and the system of the Detroit Edison Company. The new interconnection, which crosses the St. Clair River in the vicinity of the Lambton Generating Station project about 14 miles south of Sarnia, is now in operation at 115 kv. It is to be converted to 345-kv. operation in 1968.

With the completion of these and various other projects, the Commission's transmission line network was increased during 1966 by 220 circuit-miles to a total of 19,269 circuit-miles.

Expansion of the Commission's transformer facilities included the installation of new equipment at Pinard and Hammer Transformer Stations to permit conversion of the northern section of the EHV line to 500-kv. operation. Transformer facilities scheduled for service in the spring of 1967 at Kleinburg Transformer Station will permit conversion of the southern section to 500-kv. operation. Also completed during the year were five new transformer stations and major changes at a number of existing transformer stations.



A collector station between St. Catharines and Hamilton, Ontario, marshals Niagara River power for transmission to centres of use.



Manic 5 Dam under construction in Quebec.

Québec

Quebec's extensive program of development of electric power generating facilities added a further 404,040 kw. of new capacity in 1966, to raise the province's total installed capacity to more than 11 million kilowatts. All of the new capacity is hydro. A total of 562,870 kw. of new capacity is scheduled for 1967; 300,000 kw. of this new capacity will be thermal and 262,870 kw. hydro.

On the basis of present scheduling, a total of nearly five million kilowatts of new capacity, almost all of it hydro, should come into service during the years 1968 to 1974.

QUEBEC HYDRO-ELECTRIC COMMISSION

Hydro-Electric Projects: One of North America's most spectacular engineering projects, the harnessing of the power potential of the Manicouagan and Outardes Rivers, went ahead on schedule during 1966. The project involves the construction of seven hydro plants on the two rivers and the installation of additional capacity at one existing station. The total generating capacity of the completed Manicouagan-Outardes project will be in excess of five and one-half million kilowatts.

During 1966, units 6 and 7 were installed at Manic 2, eleven miles from the mouth of the Manicouagan River, increasing the plant generating capacity to 888,300 kw. Each of the turbines is rated at 170,000 hp. Installation in 1967 of the eighth and final unit will complete the development of Manic 2.

Manic 1, at the mouth of the Manicouagan River, went into operation in 1966 with 122,940 kw. of generating capacity in two units. The

turbines at Manic 1 are each rated at 80,000 hp. and the generators at 61,470 kw. The third unit will be installed in 1967 to complete the development.

Construction of Manic 5, the largest development in the Manicouagan - Outardes hydro complex, was well advanced in 1966. The first two of eight units, each with a 225,000-hp. turbine and 167,500-kw. generator, will be installed in 1970, followed by four others in 1971 and the remaining two in 1972. When completed in 1967, the buttressed, multi-arch dam at Manic 5 will be over 4,000 feet long and will rise 703 feet above bedrock, making it one of the highest and most massive dams of its kind in the world. Some 85 per cent of the dam was in place at the end of 1966. The penstocks, tunnels, surge tank, powerhouse and other architectural work will be completed by 1970.

The last of the new Manicouagan plants to come into service in the current program will be Manic 3, scheduled for initial operation in 1972. The total generating capacity in seven units at Manic 3 will be 1,120,000 kw. and the total turbine capacity, 1,505,000 hp. The plant is scheduled for completion by 1974.

On the Outardes River, construction of the Outardes 4 and Outardes 3 plants is well under way. Total generating capacity at Outardes 4 will be 632,000 kw. in four units; the total turbine capacity will be 864,000 hp. The first three units will be in service in 1968 and the fourth in 1970. The dam at Outardes 4 will create a reservoir with more than 250 square miles of surface area.

The underground powerhouse planned for Outardes 3 will house four units consisting of 189,000-kw. generators and 258,500-hp. turbines. Three of the units are scheduled for service in 1968 and the fourth in 1969.

The Outardes 2 plant, adjacent to the

existing 50,000-kw. Outardes Falls station, is scheduled for service in 1970. The new plant is designed for a total capacity of 447,000 kw. in three units. This plant was previously scheduled for completion in 1968 but has been rescheduled because favourable runoff forecasts in the area for the next several years will enable sufficient power to be drawn from completed projects in the Manic-Outardes complex to meet demands up to 1970.

Elsewhere in the province, Québec Hydro is developing two sites on the Quinze Rapids reach of the Upper Ottawa River to help supply the power requirements of the rapidly-developing northwestern region of the province. The sites are Rapides-des-Îles and Premières Chutes (First Falls). The Rapides-des-Îles plant is designed for four units consisting of 37,250-kw. generators and 50,000-hp. turbines. One unit was installed in 1966 and two others are scheduled for installation in 1967. The date of installation of the fourth unit will depend upon the magnitude of power demands. Rapides-des-Îles will eventually be operated by remote control. The total designed generator installation for Premières Chutes is 120,000 kw. in four units; the turbines will be rated at 40,000 hp. each. The first unit is scheduled for installation in 1968 and two others in 1969. The fourth unit has not been scheduled.

In 1966, Québec Hydro removed from service for economic reasons three small hydro-electric installations having a total capacity

of 9,950 kw. These plants were Chaudière No. 1 on the Ottawa River, Natural Steps on the Montmorency River and Petites Bergeronnes No. 1 on the Petites Bergeronnes River.

Thermal-Electric Projects: Québec's enormous water power resources continue to provide almost all the electric energy needed to take care of the province's requirements. Despite Québec's almost exclusive dependence upon hydro power, however, the greater flexibility offered by integrated hydro-thermal operation is leading to a growing interest in the provision of thermal capacity.

Although no thermal-electric capacity was installed in 1966, two 150,000-kw. units are scheduled to be added in 1967 at Tracy, about 45 miles from Montreal. The addition of this new capacity will bring Tracy's installed total to 600,000 kw. in four units. The Tracy plant will continue to supply peak power during construction of the Manicouagan-Outardes hydro plants. After these plants are completed, Tracy will operate as a standby plant.

Construction of Québec's first nuclear generating plant began in 1966. The Gentilly plant at Pointe aux Roches on the south shore of the St. Lawrence is being built by Atomic Energy of Canada in co-operation with Québec Hydro engineers. Rated at 250,000 kw., Gentilly, like the Douglas Point Station in Ontario, is designed to use natural uranium as fuel and heavy water as the moderator which sustains the

Silhouette of the multi-arched Manic 5 Dam towers over downtown Montreal.



chain reaction in the fuel. Douglas Point, however, uses heavy water under pressure as the coolant for the moderator core, whereas, boiling light water will be used at Gentilly for simplicity in design and construction. On completion in 1971, the plant will be operated by Québec Hydro who will also buy the power produced. Québec Hydro will purchase the plant when it has demonstrated its reliability and its suitability for incorporation into the Québec Hydro System.

Electric Power Transmission: The very considerable distances over which power from the Manicouagan-Outardes plants must be carried and the magnitude of the output from the plants led to the selection of 735 kv. as the line voltage which would provide the most economic transmission. As planned, power from the Manicouagan-Outardes plants will be fed to two collector stations, Micoua and Manicouagan, at 300 kv. From the collector stations, the power will be transmitted to load centres in the Québec-Montreal area over three 735-kv. lines.

The first of these 735-kv. lines follows the north shore of the St. Lawrence River from the Manicouagan collector station to the Isle of Orleans, where it crosses the river to Lévis and follows the south shore to the Boucherville substation near Montreal, a total distance of 365 miles. This line went into service in September 1965 when first power from Manic 2 became available. The second line, following this same route, will be completed in 1968.

The third line will be built entirely on the north shore from the Micoua collector station to Montreal, a distance of 375 miles. The first section from Micoua to Québec City will be in service in 1970 and the entire line, in 1971.

MANICOUAGAN POWER COMPANY

The Company's McCormick plant was integrated with Québec Hydro's Manic 1 project by an extension of its switching station to accommodate the power output of Manic 1.

ASBESTOS CORPORATION LIMITED

The corporation is proceeding with its plans to build a thermal-electric plant with substation and transmission facilities at Asbestos Hill in the Ungava region. The plant is designed to have a capacity of at least 7,500 kw. Initial power is expected to be available in 1968 and full capacity by 1969. Power from the plant will be used to operate an asbestos mill and supply the power requirements of a townsite having a population of about 500. The mill is scheduled for completion in 1970.



Tracy thermal station in Quebec.

SAGUENAY TRANSMISSION COMPANY LIMITED

The Company completed extensive substation construction during the year including the installation of a second 10,000/13,333-kva. transformer at its Roberval Substation. Two 15,000/20,000 kva. transformer units and two 20,000/30,000/40,000-kva. units were installed at Mistassini and Chicoutimi, respectively, replacing smaller units.

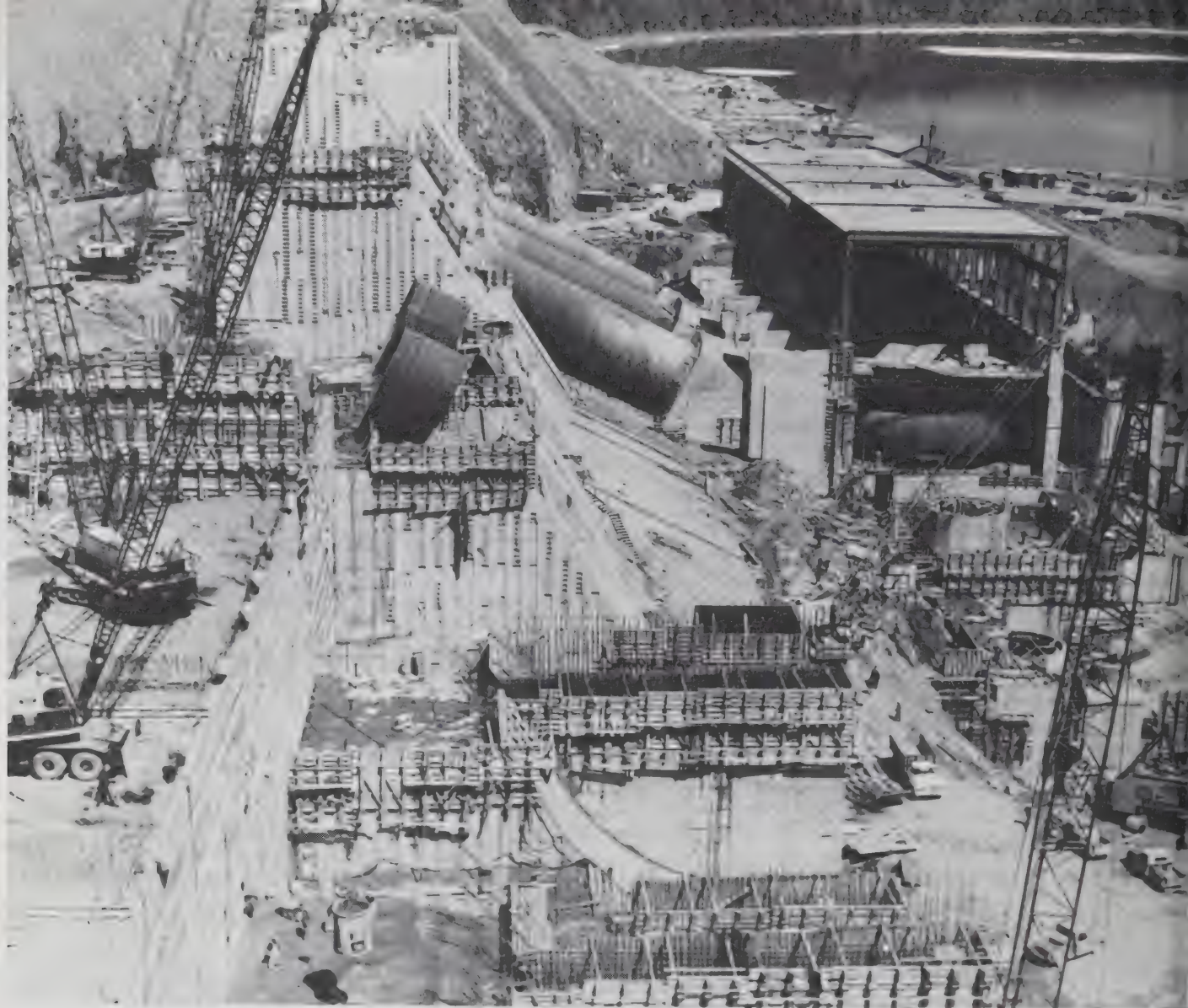
At Desbiens, a new substation, consisting of two 10,000/13,333-kva. units was commissioned.

New Brunswick

New Brunswick's total generating capacity was increased in 1966 by 110,000 kw. of new thermal capacity. Another 110,000 kw. of thermal capacity is expected to be completed in 1967 and a further 500,000 kw. subsequent to 1967. During 1967, 500 kw. of new hydro capacity will be installed followed by 600,000 kw. in the years subsequent to 1967.

NEW BRUNSWICK ELECTRIC POWER COMMISSION

Construction of the Commission's Mactaquac hydro development on the Saint John River is proceeding on schedule. The first of six units is expected to be in service about the end of 1967 followed by the second and third units in 1968.



Construction continues at the Mactaquac hydro development in New Brunswick, (above) penstocks and power house area and (below) spillway structure.



Mactaquac, or Big Branch, was the name given by the Maliseet Indians to a stream which joins the Saint John River at the site of the new development about 14 miles above Fredericton. The plant is designed for a total of 600,000 kw. in six units. The ratings of the turbines will be 140,000 hp. each. Units 4, 5 and 6 should be in operation by 1976. The dam at Mactaquac will create a lake about 59 miles long, the largest in New Brunswick. The filling of the headpond will necessitate the relocation of Woodstock's Island Park. New recreational sites have been chosen and their development will provide new water oriented activities not previously available.

A 500-kw. unit for the Milltown hydro development on the St. Croix River is on site awaiting design of the intake facilities. This unit will boost the installed capacity at Milltown to 3,536 kw. in six units.

The Commission's Courtenay Bay steam plant at East Saint John was increased to a capacity of 172,600 kw. in 1966 upon completion of No. 3 unit which is rated at 110,000 kw. Unit No. 4, presently under construction, will add another 110,000-kw. to the installed capacity in 1967. Power supply and process steam for Rothesay Paper Corporation are provided by the Courtenay Bay plant.

Site surveys have been completed for a new thermal generating plant at Dalhousie. Ultimate capacity of this plant will be 500,000 kw. The first unit is expected to be completed by the fall of 1969.

A total of 165 miles of 138-kv. transmission line was added to the Commission's transmission network during 1966. Another 120 miles of 138-kv. line is scheduled for completion in 1967.

Nova Scotia

A total of 36,000 kw. of thermal capacity was commissioned in the Province in 1966; there was no increase in hydro capacity. Scheduled for service in 1967 is 9,000 kw. of hydro and 18,750 kw. of thermal capacity. A total of 230,000 kw., all of it thermal capacity, is scheduled for installation subsequent to 1967. Not included is a total of 89,700 kw. of hydro capacity which is under consideration but which has not yet been scheduled for development.

NOVA SCOTIA LIGHT AND POWER COMPANY LIMITED

The development of two hydro sites, expected to yield a combined generating capacity of 16,200 kw., is being considered by the Company. The sites are at Lequille on the

Allain (Lequille) River and at Alpena on the Nictaux River. Lequille would provide 11,200 kw.

A total of 27 miles of 69-kv. transmission line was completed during the year and transformer capacity in the Company's sub-stations was increased by 19,900 kva.

NOVA SCOTIA POWER COMMISSION

The Commission's proposed addition to the Weymouth Falls hydro plant on the Sissiboo River is scheduled for completion in 1967. The new unit, consisting of a 9,000-kw. generator and a 12,000-hp. turbine will bring the total installed capacity to 18,000 kw. in two units.

The capacity of the Glace Bay thermal plant, formerly owned by Seaboard Power Corporation, was boosted to 108,000 kw. in 1966 following installation of a 36,000-kw. unit. In addition to the electric power made available, the new unit will enable the Glace Bay station to supply the steam required by Deuterium of Canada for its heavy water plant which is under construction at Glace Bay.

Additional thermal units proposed for installation at the Trenton and Point Tupper thermal plants have capacities of 150,000 kw. and 80,000 kw. respectively. The Point Tupper plant will supply both the electrical and the steam requirements of the Canadian General Electric heavy water plant.

Two hydro sites being considered for development offer the possibility of a combined 73,500 kw. of new capacity. The larger of the two, Wreck Cove on Wreck Cove Brook, is proposed for development to a capacity of 67,500 kw. and the other, at Riverdale on the Sissiboo River, to 6,000 kw. Neither development has yet been scheduled.

Extensions to the Commission's transmission network in 1966 amounted to 137.9 miles of 138-kv. line and 44.9 miles at 69-kv. Under construction at the end of the year was another 107 miles of 69-kv. line.

New transformer capacity totalling 261,170 kva. went into operation at the Commission's sub-station in 1966.

SCOTT MARITIME PULP LIMITED

The Company's Abercrombie Point thermal plant is scheduled for completion in 1967. The plant will house one unit rated at 18,750 kw.

Newfoundland

Newfoundland's total generating capacity



Trenton thermal plant, Nova Scotia.



*Seaboard thermal plant at
Glace Bay, Nova Scotia.*

was boosted by 39,908 kw. in 1966, all of it thermal capacity. A new hydro plant under construction will make 229,500 kw. of additional generating capacity available in 1967 and a further 229,500 kw. later.

Near the year's end, a start was made on the development of more than 4,000,000 kw. in ten units on the Churchill River in Labrador. Plans call for the first units to be available for service in 1971-72.

NEWFOUNDLAND AND LABRADOR POWER COMMISSION

Progress is continuing on schedule at the Bay d'Espoir hydro development on the Salmon River. Three units with a total generating capacity of 229,500 kw. and a total turbine capacity of 300,000 hp. are scheduled for installation in 1967. The second stage of the development, the Grey River diversion, was started in 1966 and will ultimately double the initial capacity to bring the total generating capacity at Bay d'Espoir to 459,000 kw. and the turbine capacity to 600,000 hp.

A new 12,500-kw. gas turbine plant at Holyrood went into service in September 1966.

Small fuel plants were installed in 1966 at seventeen locations, adding 2,408 kw. to the Commission's thermal generating capacity.

Transmission lines installed during 1966 in connection with the Bay d'Espoir development include 32 miles at 230 kv. and 94.5 miles at 138 kv. The Commission's program of hydro development includes the installation of an island-wide transmission grid consisting of 230-kv. main line with 138-kv. extensions.

BOWATER POWER COMPANY LIMITED

A 25,000-kw. gas turbine was installed at the Company's plant in Corner Brook to accommodate the power demands anticipated for the period prior to delivery of power from the Bay d'Espoir development in March 1967.

A total of eighteen miles of 25-kv. transmission line was placed in service during the year.

*Churchill Falls on the Churchill
River in Labrador.*



CHURCHILL FALLS POWER CORPORATION LIMITED

As a result of intensive negotiations between the Corporation and Québec Hydro, a Letter of Intent providing for the sale to Québec Hydro of essentially all of the output from the Churchill Falls power development surplus to the needs of Newfoundland, was signed late in 1966.

The Churchill Falls hydro station on the Churchill River in Labrador is destined to rank as one of the largest hydro developments in the world. The head which exceeds 1,000 feet and a controlled discharge at the power plant of 49,000 cubic feet per second will allow for continuous power generation in excess of four million kilowatts. Some 4.5 million kilowatts in ten generating units is proposed for installation.

The immensity of the development becomes more real when viewed in relation to current electric power needs in Newfoundland. The 34 billion kilowatt-hours which are expected to be made available each year by the new completed development will be more than 12 times the amount of electric energy Newfoundland used during 1966. Moreover, this 34 billion kilowatt-hours per annum would supply the annual electric energy required by all of the Atlantic Provinces four times over.

Work is scheduled to get under way on excavating the tunnels to the underground powerhouse in late 1967 and commencement of other major work will follow. Plans call for power from the first units to be available in 1971-72. Installation of other units will be dependent on load buildup.

Transmission from Churchill Falls to the Québec boundary will be either at 735 kv. (alternating current) or ± 500 kv. (direct current). Engineering and economic studies in connection with transmission are presently under way.

IRON ORE COMPANY OF CANADA

The company completed the installation of a 6,000-kva. transformer at its new Redmond sub-station near Schefferville, in Labrador. In the Canal Lake Area, one 3,000-kva. sub-station was commissioned and at year's end, a 48,000-kva. sub-station remained under construction.

NEWFOUNDLAND LIGHT AND POWER COMPANY LIMITED

A merger of three electric power companies became effective during 1966; the new company is the Newfoundland Light and Power Company Limited. The Companies affected were the

original Newfoundland Light and Power Company Limited, the United Towns Electric Company and its subsidiaries, and the Union Electric Light and Power Company Limited.

During the year, the new Company completed one 10,000-kva. sub-station, one 7,500 kva. sub-station and two 5,000 kva. sub-stations, all in the St. John's area, and a 10,000 kva. sub-station at Gander.

Yukon and Northwest Territories

New generating capacity installed in 1966 in the Territories was limited to 2,090 kw. of thermal capacity. On the basis of current information, however, at least 7,100 kw. of thermal capacity will begin initial service in 1967.

During 1968-1970, hydro capacity of 8,000-kw., and possibly as much as 16,000-kw. is proposed for installation in Yukon Territory.

NORTHERN CANADA POWER COMMISSION

The Commission was active during 1966 in installing small thermal units in new and existing plants in the Northwest Territories. A new thermal station also was installed in Yukon Territory. In the Whitehorse vicinity, however, plans are under way to meet growing power demands by installing additional hydro units at an existing hydro station.

In 1966, a total of 1,500 kw. of thermal capacity was brought into operation in plants of the Commission. The increase consisted of a 500-kw. unit added at the Frobisher Bay plant and a 250-kw. unit at Fort McPherson, both in the Northwest Territories, and a 750-kw. plant at Dawson City, in Yukon Territory. In 1967, new thermal capacity totalling 2,430 kw. will be installed at Inuvik, Cambridge Bay, Coppermine, Fort Simpson and Fort Resolution, all of which are in the Northwest Territories.

At Whitehorse, Yukon Territory, an 8,000-kw. unit is proposed for installation at the Commission's Whitehorse Rapids station by 1968 or 1969, raising the station's total generating capacity to 19,390 kw. in three units. This unit may be followed by a fourth unit of similar capacity in 1969 or 1970.

YUKON ELECTRICAL COMPANY LIMITED

The Company installed a net total of

1,340 kw. of thermal capacity in 1966 and was planning the installation of another 500 kw. for service in 1967. Construction of 59 miles of transmission line varying from 14.4 to 34.5 kv. was completed in 1966 and a further 7 miles of 34.5 kv. line remained under construction at the end of the year.

CASSIAR ASBESTOS CORPORATION

The Corporation is planning the construction of a thermal station at its Clinton Creek Mine, north of Dawson City. The station will house four diesel units each with a generator capacity of 1,400 kw.

Prince Edward Island

No new generating capacity has been installed in the Province since 1963 with the result that the growing demand for power is expected to exceed the supply by 1970. A prospect for additional energy lies in the two-cable transmission line to be placed as part of the proposed Northumberland Strait Causeway to carry power from New Brunswick. Fearing that the cable will not be available in time, however, the Maritime Electric Company is proposing to construct a 20,000-kw. thermal unit at Charlottetown.

TABULAR SUMMARY - HYDRO

DEVELOPMENT		RIVER	HYDRO - ELECTRIC CAPACITY										REMARKS	
			INSTALLED DURING 1966		TOTAL STATION CAPACITY AT END 1966		PROPOSED FOR INSTALLATION							
							IN 1967			AFTER 1967				
			No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.	Turbine hp.	Generator kw.	No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.	No. of Units	Total Turbine Capacity hp.		Total Generator Capacity kw.
British Columbia														
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY														
Portage Mountain		Peace												
ALUMINUM COMPANY OF CANADA LTD.														
Kemano		Nechako to Kemano			1,050,000	707,200	1	150,000	105,600					
CROWN ZELLERBACH CANADA LTD.														
Ocean Falls		Link			16,800	11,870	3	6,000	Mech					
COMINCO LTD.														
Waneta		Pend d'Oreille	1	130,000	76,000									
Brilliant		Kootenay			500,000	292,000								
WESTERN MINES LIMITED					111,000	81,600								
Tennent Creek		Tennent Creek	1	4,500	3,060	4,500	3,060							
TOTAL				134,500	79,060			156,000	105,600			3,137,000	2,297,200	
Yukon														
NORTHERN CANADA POWER COMMISSION														
Whitehorse Rapids		Yukon			15,000	11,390						2	20,000	16,000
TOTAL													20,000	16,000

Six small turbines totalling 12,000 hp. being replaced with three turbines totalling 18,000 hp. (the turbines are connected directly to mechanical equipment).

CALGARY POWER LTD.					
Big Bend	Brazeau	1	250,000	161,500	
Pumping-Generating	Brazeau	1	12,850	11,250	
TOTAL			262,850	172,750	

SASKATCHEWAN POWER CORP.									
Squaw Rapids	Saskatchewan	2	106,000	77,400	382,000	278,400			
Coteau Creek	South Saskatchewan						3	252,000	186,600
TOTAL			106,000	77,400				252,000	186,600

MANITOBA HYDRO							
Grand Rapids	Saskatchewan						
Kettle Rapids	Nelson						
							Initially 400,000 kw. scheduled for installation by 1971.
TOTAL							

ONTARIO HYDRO		2	188,000	125,400	188,000	125,400	2	224,000	139,400	2	168,000	111,600	Provision for two other units.
Kipling	Matigami												
Mountain Chute	Madawaska												
Barrett Chute	Madawaska												The two new units are scheduled for service in 1969.
Stewartville	Madawaska												The two new units are scheduled for service in 1969.
Aubrey Falls	Mississagi												Both units scheduled for service in 1969.
HURONIAN COMPANY LIMITED													
High Falls	Spanish			4,000	23,500	17,550							Four 2,000-kw. (25 cycle) generators uprated to 3,000 kw. (60 cycle).
TOTAL			188,000	129,400				224,000	139,400		524,000	363,400	

DEVELOPMENT		RIVER	HYDRO - ELECTRIC CAPACITY												REMARKS
			INSTALLED DURING 1966			TOTAL STATION CAPACITY AT END 1966		PROPOSED FOR INSTALLATION							
								IN 1967			AFTER 1967				
			No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.	Turbine hp.	Generator kw.	No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.	No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.		
Quebec															
QUEBEC HYDRO															
Manic 2		Manicouagan	2	340,000	253,800	1,190,000	888,300	1	170,000	126,900					
Manic 1		Manicouagan	2	160,000	122,940	160,000	122,940	1	80,000	61,470					
Rapide-des-Îles		Ottawa (Upper)	1	50,000	37,250	50,000	37,250	2	100,000	74,500	1	50,000	37,250	Fourth unit not scheduled.	
Manic 5		Manicouagan									8	1,800,000	1,340,000	Two units scheduled for service in 1970 and completion of entire development in 1972.	
Manic 3		Manicouagan						7	1,505,000	1,120,000				Proposed for service in the years 1972-74.	
Outardes 4		Outardes						4	864,000	632,000				Three units scheduled for service in 1968 and the fourth in 1970.	
Outardes 3		Outardes						4	1,034,000	756,000				Three units scheduled for service in 1968 and the fourth in 1969.	
Outardes 2		Outardes						3	612,000	447,000				Three units scheduled for service in 1970. This is a new station adjacent to the existing 50,000-kv. Outardes Falls station.	
Première Chute		Ottawa (Upper)						4	160,000	120,000				One unit scheduled for initial operation in 1968; two in 1969 , and the fourth unit not scheduled.	
Chaudière No. 1		Ottawa												7,650-kw. generating station removed from service.	
Natural Steps		Montmorency												1,500-kw. generating station removed from service.	
Petites Bergeronnes		Petites Bergeronnes												800-kw. generating station removed from service.	
TOTAL			550,000	413,990	(new capacity)	350,000	262,870		6,025,000	4,452,250					
			16,325	9,950	(removed from service)										
			533,675	404,040	(net increase)										

Fourth unit not scheduled.

Two units scheduled for service in 1970 and completion of entire development in 1972.

Proposed for service in the years 1972-74.

Three units scheduled for service in 1968 and the fourth in 1970.

Three units scheduled for service in 1968 and the fourth in 1969.

Three units scheduled for service in 1970. This is a new station adjacent to the existing 50,000-kv. Outardes Falls station.

One unit scheduled for initial operation in 1968; two in 1969, and the fourth unit not scheduled.

7,650-kw. generating station removed from service.

1,500-kw. generating station removed from service.

800-kw. generating station removed from service.

New Brunswick

[illegible]

Nova Scotia

[illegible]

Newfoundland

NEW FOUNDLAND AND LABRADOR POWER COMMISSION																			
Bay d'l'Espoir					Salmon					3	300,000	229,500	3	300,000	229,500				
CHURCHILL FALLS POWER CORPORATION LTD.																			
Churchill Falls					Churchill					10	6,150,000	3,914,000							
TOTAL											300,000	229,500		6,450,000	4,143,500				

NET TOTAL FOR Canada	1,225,025	862,650				1,042,650	746,870		17,398,000	13,168,950
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TABULAR SUMMARY - THERMAL

DEVELOPMENT	Type	THERMAL - ELECTRIC CAPACITY						REMARKS
		INSTALLED DURING 1966		TOTAL STATION CAPACITY AT END 1966 kw.	PROPOSED FOR INSTALLATION		Total Capacity kw.	
		No. of Units	Total Capacity kw.		No. of Units	Total Capacity kw.		
<i>British Columbia</i>								
COLUMBIA CELLULOSE COMPANY LTD.	S	1	34,560	49,560				
Watson Island								
CASSIAR ASBESTOS CORPORATION LTD.	IC	1	900	4,573				
Cassiar								
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY	S			486,000	1	162,000	1	162,000
Burrard								
NORTHWOOD PULP LIMITED	S					1,500		
Prince George								
MacMILLAN, BLOEDEL LIMITED	S			14,925	1	35,000		162,000
Powell River								
TOTAL			35,460			198,500		

Northwest Territories

NORTHERN CANADA POWER COMMISSION									
Fort Smith	IC				3,232	.			One 1,000-kw. unit and one 280-kw. unit to be removed from service in 1967.
Fort McPherson	IC	1	250		725				
Frobisher Bay	IC	1	500		3,960				
Inuvik	IC				3,460	1	1,000		
Cambridge Bay	IC				600	2	500		
Coppermine	IC					3	450		
Fort Simpson	IC				1,075	1	280		One 75-kw. unit to be removed from service in 1967.

Fort Resolution	IC	750	(new capacity)	2,430	(proposed new capacity)
TOTAL				1,430	(proposed for removal)
				1,000	(net increase)

Yukon

NORTHERN CANADA POWER COMMISSION	IC	3	750	750		
Dawson City	IC	3	750	750		
YUKON ELECTRICAL COMPANY LIMITED						
Destruction Bay	IC	2	350	700		
Teslin	IC	1	200	450		
Ross River	IC	2	120	120		
Pelly River Crossing	IC	2	80	80		
Carcross	IC					One 160-kv. unit removed from service.
Watson Lake	IC			1,200	1	500
CASSIAR ASBESTOS CORPORATION LTD.						
Clinton Creek	IC				4	5,600
TOTAL			1,500	(new capacity)	6,100	
			160	(removed from service)		
			1,340	(net increase)		

Alberta

CALGARY POWER LTD.	S			282,000	1	300,000	
Wabamun	S					1	300,000
Nr. Wabamun	S						
CANADIAN UTILITIES LIMITED							
Fort McMurray	IC	4	3,400	4,475			
Simionette (Clear Hills)	GT	1	20,000	20,000			One 100-kv. unit removed from service.
Battle River (Forestburg)	S			66,000		1	150,000

GT - Gas Turbine, IC - Internal Combustion, S - Steam

DEVELOPMENT	Type	THERMAL - ELECTRIC CAPACITY							REMARKS	
		INSTALLED DURING 1966		TOTAL STATION CAPACITY AT END 1966 kw.	PROPOSED FOR INSTALLATION					
					IN 1967		AFTER 1967			
					No. of Units	Total Capacity kw.	No. of Units	Total Capacity kw.		
ALBERTA (Cont'd)										
CITY OF EDMONTON										
Edmonton	S	1	75,000	405,000			2	330,000		First unit for service in 1970; second unit scheduled for 1973.
Edmonton	S									
NORTHLAND UTILITIES										
High Level	IC	1	500	2,350						
Fairview	IC			9,000						Two 1,200-kw. units removed from service.
GREAT CANADIAN OIL SANDS LTD.										
Fort McMurray	S	1	30,500	30,500	1	30,500				
CHEMCELL (1963) LIMITED										
Clover Bar (Edmonton)	S	1	4,000	22,000						
TOTAL			133,400	(new capacity)		330,500		780,000		
			2,500	(removed from service)						
			130,900	(net increase)						
Saskatchewan										
SASKATCHEWAN POWER CORPORATION										
Boundary Dam (Estevan)	S			132,000			2	300,000		One unit scheduled for operation in 1969, the second in 1970.
Success	GT	1	15,400	15,400			2	30,800		
TOTAL			15,400					330,800		

One unit scheduled for operation in 1969, the second in 1970.

Two 1,200-kw. units removed from service.

First unit for service in 1970; second unit scheduled for 1973.

Manitoba

MANITOBA HYDRO									
Brandon	S			132,000				1	105,000
	S			132,000	2		26,000		
TOTAL							26,000		105,000

Ontario

ONTARIO HYDRO										
Lakeview (Toronto)	S	1	300,000			2	600,000	1	300,000	Total capacity of 2,400,000-kw. scheduled for completion in 1968.
	GT	4	30,000		1,530,000					
Douglas Point (between Kincardine & Port Elgin)	N	1	200,000		200,000					
	S & GT	1	30,000		1,230,000					
R. L. Hearn	GT	4	65,280		65,280					
Detweiler (Kitchener)	GT	2	32,640		62,640					
A. W. Manby (Toronto)	GT	1	16,320		48,960					
Lambton (Sarnia)	S & GT	2	15,000		15,000			4	2,000,000	One unit scheduled for initial operation in each year from 1968 to 1971.
Niagara Region								4	2,000,000	Two units scheduled for installation by 1973.
Pickering (Toronto)	N							2	1,080,000	One nuclear unit scheduled for operation in 1971, the second in 1972.
Various Locations							44,500			Installations at generator and transformer stations for peaking, base load and standby.
TOTAL			689,240				644,500		5,380,000	

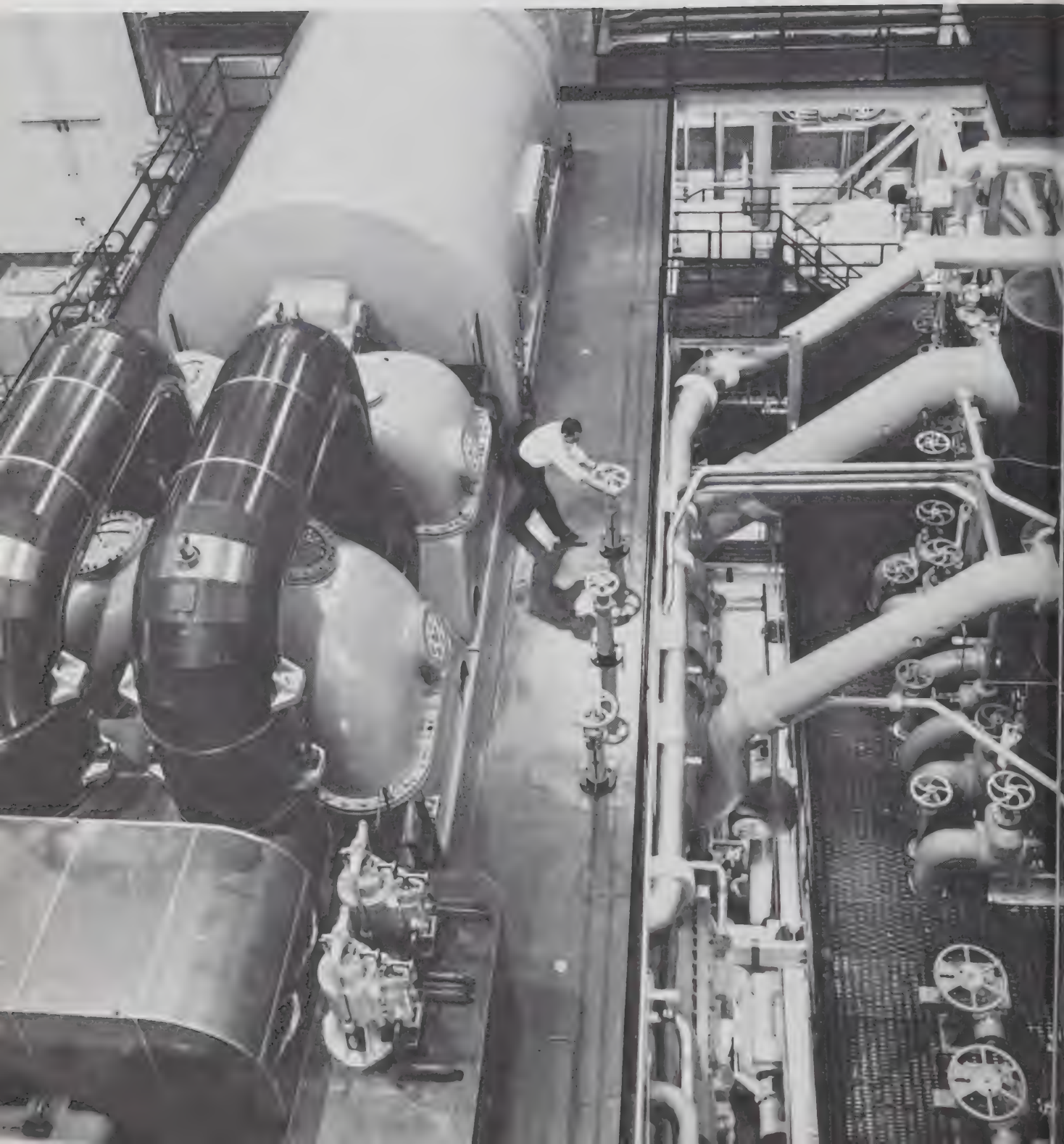
Quebec

QUÉBEC HYDRO										
Tracy (Sorel)	S					2	300,000			
	N				300,000			1	250,000	
Gentilly (Pointe aux Roches)										
ASBESTOS CORPORATION LIMITED										
Asbestos Hill (Ungava)	IC							5	7,500	
TOTAL							300,000		257,500	

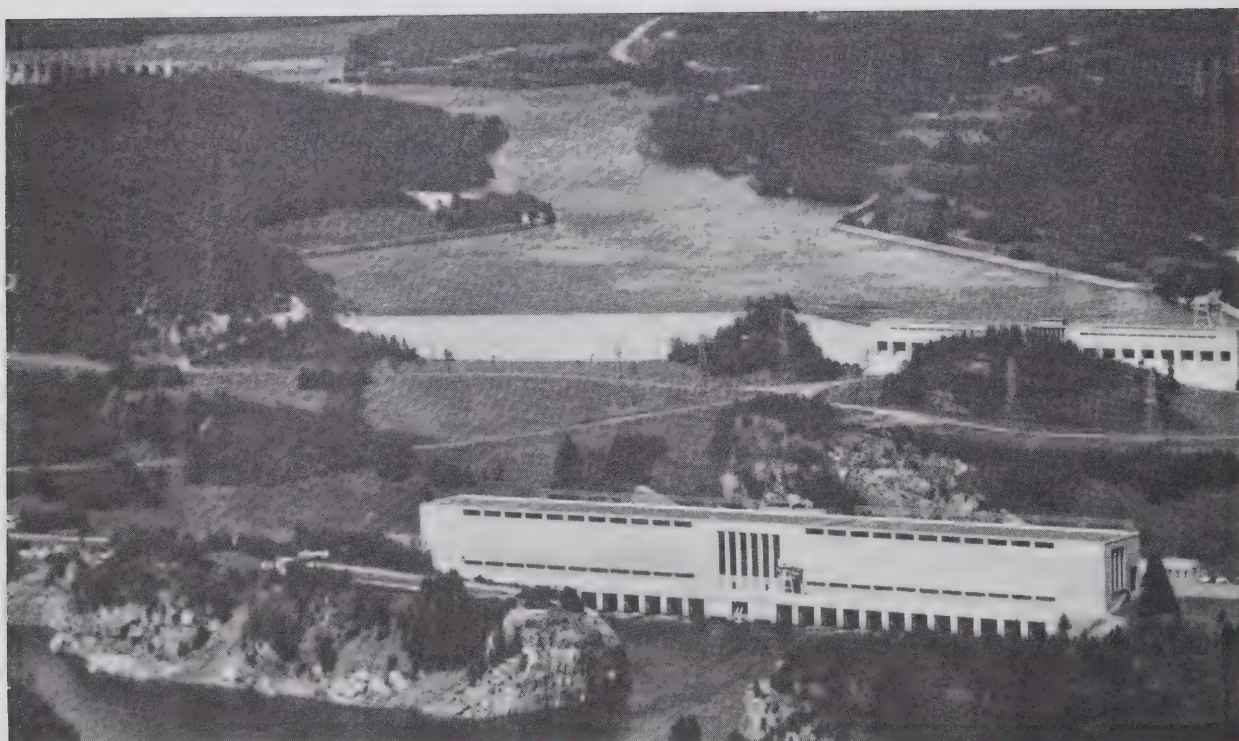
IC - Internal Combustion, GT - Gas Turbine, N - Nuclear, S - Steam

DEVELOPMENT	Type	THERMAL - ELECTRIC CAPACITY							REMARKS	
		INSTALLED DURING 1966		TOTAL STATION CAPACITY AT END 1966 kw.	PROPOSED FOR INSTALLATION					
		No. of Units	Total Capacity kw.		No. of Units	Total Capacity kw.	No. of Units	Total Capacity kw.		
New Brunswick										
NEW BRUNSWICK ELECTRIC POWER COMMISSION										
Courtenay Bay (East Saint John)	S	1	110,000	172,600	1	110,000	5	500,000	First unit scheduled for operation in 1969.	
Dalhousie	S									
TOTAL			110,000			110,000		500,000		
Nova Scotia										
NOVA SCOTIA POWER COMMISSION										
Glace Bay	S	1	36,000	108,000					150,000	Plant purchased from Seaboard Power Corporation Limited in 1966.
Trenton				60,000					80,000	
Point Tupper										
SCOTT MARITIMES PULP LIMITED										
Abercrombie Point					1	18,750				
TOTAL			36,000			18,750		230,000		
Newfoundland										
BOWWATERS POWER COMPANY LIMITED										
Corner Brook	GT	1	25,000	25,000						
NEWFOUNDLAND AND LABRADOR POWER COMMISSION										
Holyrood	GT	1	12,500	12,500						Small thermal units installed at 17 locations.
Various Locations			2,408	2,408						
TOTAL			39,908							
NET TOTAL FOR Canada										
			1,058,998			1,635,350		7,744,550		

Parbo-generator at Wabamun thermal plant, Alberta.



ELECTRIC POWER GENERATING STATIONS



*Hydro generating stations on the Saguenay River
in Quebec, Shipshaw in foreground and Chute
à Caron in the distance.*

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

British Columbia

1	Kemano	Nechako to Kemano	ALCAN	1954	1958	2,500	4 3	150,000 150,000	1,050,000	97,600 105,600	707,200
2	Waneta	Pend d'Oreille	CMSC	1954	1966	210	1 2 1	130,000 120,000 130,000	500,000	72,000 72,000 76,000	292,000
3	Bridge River No. 2	Bridge to Seton Lake	BCHPA	1959	1960	1,264	4	82,000	328,000	62,000	248,000
4	Bridge River No. 1	Bridge to Seton Lake	BCHPA	1948	1954	1,264	4	69,000	276,000	45,000	180,000
5	Cheakamus	Cheakamus to Squamish	BCHPA	1957	1957	954	2	95,000	190,000	70,000	140,000
6	John Hart	Campbell	BCHPA	1947	1953	390	6	28,000	168,000	20,000	120,000
7	Ruskin	Stave	BCHPA	1930	1950	123	3	47,000	141,000	35,200	105,600
8	Brilliant	Kootenay	CMSC	1944	1949	90	3	37,000	111,000	27,200	81,600
9	Wahleach	Wahleach Lake to Fraser	BCHPA	1952	-	1,880	1	82,000	82,000	60,000	60,000
10	Upper Bonnington	Kootenay	CMSC	1907	1940	70	2 2 2	8,000 9,000 26,000	86,000	5,062 6,750 15,750	55,124
11	Ladore Falls	Campbell	BCHPA	1956	1957	122	2	35,000	70,000	27,000	54,000
12	Stave Falls	Stave	BCHPA	1912	1925	110 113	4 1	13,000 15,000	67,000	10,500 10,500	52,500
13	Lake Buntzen No. 1	Lake Buntzen to Burrard Inlet	BCHPA	1951	-	380	1	70,000	70,000	50,000	50,000
14	South Slocan	Kootenay	CMSC	1928	1929	70	3	25,000	75,000	15,750	47,250
15	Lower Bonnington	Kootenay	WKPL	1925	1926	70	3	20,000	60,000	15,750	47,250
16	Seton	Seton Creek	BCHPA	1956	-	147	1	58,500	58,500	42,000	42,000
17	Corra Linn	Kootenay	CMSC	1932	1932	53	3	19,000	57,000	13,500	40,500
18	Whatshan	Whatshan	BCHPA	1951	1956	690	3	16,500	49,500	11,250	33,750
19	Strathcona	Campbell	BCHPA	1958	-	140	1	42,000	42,000	33,750	33,750
20	Stillwater	Lois	MBPR	1930	1948	-	2	25,000	50,000	16,200	32,400
21	Clowhom Falls	Clowhom	BCHPA	1958	-	145	1	40,000	40,000	30,000	30,000

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
BRITISH COLUMBIA (Cont'd)											
22	Puntledge	Puntledge	BCHPA	1955	-	340	1	35,000	35,000	27,000	27,000
23	Lake Buntzen No. 2	Lake Buntzen to Burrard Inlet	BCHPA	1913	1919	380	3	13,500	40,500	8,900	26,700
24	Jordan River	Jordan	BCHPA	1911	1931	1,010	2 1 1	5,430 10,125 18,000	38,985	3,200 8,000 12,000	26,400
25	Ash River	Ash	BCHPA	1959	-	735	1	35,000	35,000	25,200	25,200
26	La Joie	Bridge	BCHPA	1957	-	176	1	30,000	30,000	22,000	22,000
27	Powell River	Powell	MBPR	1911	1926	157 147 147	1 1 2	13,500 3,600 3,000	23,100	12,000 3,750 2,800	21,350
28	Elko	Elk	EKPC	1923	1924	190	2	7,500	15,000	6,000	12,000
29	Ocean Falls	Link	CZC	1917	1932	150	1 1 2	2,100 2,100 6,300	16,800	1,720 1,750 4,200	11,870
30	Falls River	Big Falls Creek	BCHPA	1930	1960	248	2	6,000	12,000	4,800	9,600
31	Nelson	Kootenay	CN	1907	1950	60 60 70 70	1 1 1 1	1,670 1,900 3,000 6,750	13,320	750 1,000 2,120 4,800	8,670
32	Alouette	Alouette Lake to Stave Lake	BCHPA	1928	-	125.5	1	12,500	12,500	8,000	8,000
33	Walter Hardman	Cranberry Creek	COR	1960	1965	770	2	5,800	11,600	4,000	8,000
34	Beach	Britannia Creek Furry Creek	ACL	1916	1917	1,835 760	2 1	3,750 3,750	11,250	2,000 2,000	6,000
35	Shuswap Falls	Shuswap	BCHPA	1929	1942	72 82	1 1	3,800 4,000	7,800	2,400 2,800	5,200
36	Aberfeldie	Bull	EKPC	1922	1922	275	2	3,650	7,300	2,500	5,000
37	Spillimacheen	Spillimacheen	BCHPA	1955	1955	207	2 1	1,200 3,000	5,400	900 2,200	4,000
38	Tennent Creek	Tennent Creek	WML	1966	1966	2,050	1	4,500	4,500	3,060	3,060
39	Woodfibre	Woodfibre Creek	RC	1947	-	920	1	3,650	3,650	2,250	2,250

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
BRITISH COLUMBIA (Cont'd)											
40	Port Alice	Victoria Lake to Neroutsos Inlet	RC	1953	-	425	1	3,200	3,200	2,000	2,000
Total capacity of plants under 1,500 kw.									11,995	7,848	
Total capacity of turbines connected directly to mechanical equipment									41,710		
Total (all plants)									3,951,610	2,695,072	

Yukon Territory

1	Whitehorse Rapids	Yukon	NCPC	1958	1958	61	2	7,500	15,000	5,695	11,390
2	North Fork	Klondike	YCGC	1911	1935	220	1	5,000		3,600	
							1	5,000		2,700	
							1	5,000	15,000	3,750	10,050
3	Mayo River	Mayo	NCPC	1952	1957	110	2	3,000	6,000	2,550	5,100
Total capacity of plants under 1,500 kw.									2,140	1,650	
Total capacity of turbines connected directly to mechanical equipment											
Total (all plants)									38,140	28,190	

Northwest Territories

1	Taltson	Taltson	NCPC	1965	-	-	1	25,000	25,000	18,000	18,000
2	Snare Falls	Snare	NCPC	1960	-	63	1	9,200	9,200	7,000	7,000
3	Snare Rapids	Snare	NCPC	1948	-	56	1	8,350	8,350	7,000	7,000
4	Bluefish Lake	Yellowknife	CMSC	1941	-	110	1	4,700	4,700	3,360	3,360
Total capacity of plants under 1,500 kw.											
Total capacity of turbines connected directly to mechanical equipment											
Total (all plants)									47,250	35,360	

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

Alberta

1	Big Bend	Brazeau	CP	1965	1966	386	1 1	210,000 250,000	460,000	144,000 161,500	305,500
2	Spray	Spray Diversion	CP	1951	1960	875	2	62,000	124,000	40,400	80,800
3	Rundle	Spray Diversion	CP	1951	1960	318 317	1 1	23,000 40,000	63,000	17,000 29,750	46,750
4	Ghost	Bow	CP	1929	1954	105 92	2 1	18,000 30,000	66,000	12,750 21,150	46,650
5	Cascade	Cascade	CP	1942	1957	320	2	23,000	46,000	17,000	34,000
6	Pumping-Generating Station	Brazeau	CP	1965	-	-	1 1	12,850 12,850	25,700	9,720 11,250	20,970
7	Horseshoe	Bow	CP	1953	1955	72	2 2	4,680 7,500	24,360	3,375 5,625	18,000
8	Kananaskis	Bow	CP	1913	1951	68 70	2 1	6,000 12,000	24,000	3,400 9,560	16,360
9	Bearspaw	Bow	CP	1954	-	48	1	20,750	20,750	15,300	15,300
10	Pocaterra	Kananaskis	CP	1955	-	185	1	18,400	18,400	13,500	13,500
11	Barrier	Kananaskis	CP	1947	-	135	1	13,500	13,500	9,560	9,560
12	Interlakes	Kananaskis	CP	1955	-	98	1	6,900	6,900	5,040	5,040
13	Three Sisters	Spray Diversion	CP	1951	-	50	1	3,600	3,600	3,400	3,400

Total capacity of plants under 1,500 kw.

1,940

1,430

Total capacity of turbines connected directly to mechanical equipment

Total (all plants)

898,150

617,260

Saskatchewan

1	Squaw Rapids	Saskatchewan	SPC	1963	1966	107	6 2	46,000 53,000	382,000	33,500 38,700	278,400
2	Island Falls	Churchill	CRPC	1930	1959	56	3 3 1	16,500 19,000 19,000	125,500	11,880 18,000 17,100	106,740
3	Waterloo Lake	Charlot	EMR	1961	-	63	1	10,000	10,000	7,500	7,500

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

SASKATCHEWAN (Cont'd)

4	Wellington Lake	Charlot	EMR	1939	1960	70	2	3,300	6,600	2,400	4,800
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Total capacity of plants under 1,500 kw.

Total capacity of turbines connected directly to mechanical equipment

Total (all plants)	:	524,100	397,440
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Manitoba

1	Grand Rapids	Saskatchewan	MH	1965	1965	-	3	150,000	450,000	109,250	327,750
2	Kelsey	Nelson	MH	1960	1961	50	5	42,000	210,000	33,750	168,750
3	Seven Sisters	Winnipeg	MH	1931	1952	66	6	33,330	200,000	25,000	150,000
4	Great Falls	Winnipeg	MH	1923	1928	58	6	31,000	186,000	22,000	132,000
5	Pine Falls	Winnipeg	MH	1951	1952	37	6	19,000	114,000	13,950	83,700
6	Slave Falls	Winnipeg	WH	1931	1948	30	8	12,000	96,000	9,000	72,000
7	Pointe du Bois	Winnipeg	WH	1911	1925	45	5	5,200		3,000	
							3	6,800		4,000	
							3	6,900		5,200	
							3	7,300		5,200	
							2	8,000	105,000	5,200	68,600
8	McArthur Falls	Winnipeg	MH	1954	1955	23	8	10,000	80,000	7,650	61,200
9	Laurie River No. 2	Laurie	SGM	1958	-	55	1	7,000	7,000	5,400	5,400
10	Laurie River No. 1	Laurie	SGM	1950	1952	55	2	3,500	7,000	2,475	4,950

Total capacity of plants under 1,500 kw.

Total capacity of turbines connected directly to mechanical equipment

Total (all plants)		1,455,000	1,074,350
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HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
1	Sir Adam Beck-Niagara: Generating Station No. 1	Niagara	HEPCO	1922	1930	305 294 294 294	5 2 1 2	55,000 58,000 58,000 58,000	565,000	36,000 43,200 44,000 46,750	403,900
	Generating Station No. 2			1954	1958	292	16	105,000	1,680,000	76,475	1,223,600
	Pumping-Generating Station			1957	1958	85	6	46,000	276,000	29,450	176,700
2	Robert H. Saunders - St. Lawrence	St. Lawrence	HEPCO	1958	1959	81	16	75,000	1,200,000	57,000	912,000
3	Des Joachims	Ottawa	HEPCO	1950	1951	130	8	62,000	496,000	45,000	360,000
4	Abitibi Canyon	Abitibi	HEPCO	1933	1959	237	4 1	66,000 66,000	330,000	41,225 43,200	208,100
5	Otto Holden	Ottawa	HEPCO	1952	1953	77	4 4	35,000 33,000	272,000	25,650 25,650	205,200
6	Otter Rapids	Abitibi	HEPCO	1961	1963	107	4	60,000	240,000	43,700	174,800
7	Ontario Power	Niagara	HEPCO	1905	1919	-	3 4 7 1	11,700 11,700 13,400 20,000	195,700	7,500 8,770 8,775 13,500	132,505
8	Harmon	Mattagami	HEPCO	1965	1965	-	2	94,000	188,000	64,600	129,200
9	Pine Portage	Nipigon	HEPCO	1950	1954	105	2 2	41,000 45,000	172,000	29,700 34,650	128,700
10	Kipling	Mattagami	HEPCO	1966	1966	102	2	94,000	188,000	62,700	125,400
11	Chenaux	Ottawa	HEPCO	1950	1951	40	8	21,000	168,000	15,300	122,400
12	Little Long	Mattagami	HEPCO	1963	1963	90	2	84,000	168,000	60,800	121,600
13	DeCew Falls No. 2	Welland Canal	HEPCO	1943	1947	280	2	75,000	150,000	57,600	115,200
14	Rankine	Niagara	CNPC	1904	1924	133	5 2 3 1	10,250 12,500 10,750 12,000	120,500	7,500 9,375 9,375 10,300	94,675
15	Toronto Power	Niagara	HEPCO	1906	1915	-	7 4	15,000 13,000	157,000	9,000 7,200	91,800
16	Chats Falls	Ottawa	HEPCO	1931	1931	53	4	28,000	112,000	22,325	89,300
17	Caribou Falls	English	HEPCO	1958	1958	58	3	34,000	102,000	25,650	76,950
18	Cameron Falls	Nipigon	HEPCO	1920	1958	72 72 73	2 4 1	12,500 12,500 25,000	100,000	9,540 8,480 19,000	72,000

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
19	Manitou Falls	English	HEPCO	1956	1958	54	5	18,500	92,500	14,400	72,000
20	Alexander	Nipigon	HEPCO	1930	1958	60 58	3 2	18,000 19,000	92,000	12,750 13,500	65,250
21	Whitedog Falls	Winnipeg	HEPCO	1958	1958	50	3	27,000	81,000	21,600	64,800
22	Stewartville	Madawaska	HEPCO	1948	1948	148	3	28,000	84,000	20,400	61,200
23	Smoky Falls	Mattagami	SFPPC	1928	1931	-	4	18,750	75,000	13,200	52,800
24	Silver Falls	Kaministikwia	HEPCO	1959	-	330	1	60,000	60,000	45,000	45,000
25	Geo. W. Rayner	Mississagi	HEPCO	1950	1950	210	2	29,000	58,000	21,150	42,300
26	Barrett Chute	Madawaska	HEPCO	1942	1942	150	2	28,000	56,000	20,400	40,800
27	Upper Falls	Montreal	GLPC	1937	1957	232	2 1	12,600 31,000	56,200	9,000 22,500	40,500
28	Aguasabon	Aguasabon	HEPCO	1948	1948	290	2	27,500	55,000	20,250	40,500
29	Red Rock Falls	Mississagi	HEPCO	1960	1961	93	2	26,500	53,000	20,250	40,500
30	Island Falls	Abitibi	APPC	1924	1925	65	4	12,000	48,000	9,600	38,400
31	DeCew Falls No. 1	Welland Canal	HEPCO	1901	1913	-	1 2 1 1 2 1 1 1	3,000 3,000 6,000 6,000 6,000 6,000 6,000 6,000	45,000	2,500 2,000 4,800 5,000 5,300 5,600 5,900	38,400
32	Kakabeka Falls	Kaministikwia	HEPCO	1906	1914	178	3 1	7,500 12,500	35,000	5,400 7,970	24,170
33	High Falls	Michipicoten	GLPC	1930	1950	147	2 1	11,000 13,200	35,200	6,750 9,675	23,175
34	Big Eddy	Spanish	HCL	1929	1929	90	3	9,400	28,200	7,200	21,600
35	Sault Ste. Marie	St. Mary	GLPC	1918	1931	18.5	24 3 1	900 2,400 2,200	31,000	650 1,440 1,600	21,520
36	Iroquois Falls	Abitibi Lake & Black River	APPC	1949	1949	43	1 1 1 6 5	1,800 1,800 2,200 2,200 2,500	31,500	1,200 1,280 1,200 1,280 2,025	21,485
37	Twin Falls	Abitibi	APPC	1921	1925	57.5	5	6,000	30,000	4,050	20,250
38	Gartshore Falls	Montreal	GLPC	1958	-	112	1	30,300	30,300	20,000	20,000
39	Hollingsworth Falls	Michipicoten	GLPC	1959	-	108	1	30,300	30,300	20,000	20,000

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
40	Ear Falls	English	HEPCO	1930	1948	36	1 1 2	5,000 5,000 7,500	25,000	4,000 3,825 5,400	18,625
41	High Falls	Spanish	HCL	1905	1918	85	4 1	4,000 7,500	23,500	3,000 5,550	17,550
42	Norman	Winnipeg (West Branch)	OMPP	1925	1925	20	5	3,400	17,000	3,300	16,500
43	Lower Falls	Montreal	GLPC	1938	1941	185	2	10,900	21,800	8,100	16,200
44	Hogg	Montreal	GLPC	1964	-	78	1	21,750	21,750	15,000	15,000
45	Espanola	Spanish	KVPC	1906	1946	64	4 1 1	1,675 10,000 2,350	19,050	1,250 7,500 1,750	14,250
46	Scott Falls	Michipicoten	GLPC	1952	1952	70	2	10,000	20,000	6,800	13,600
47	Fort Frances	Rainy	OMPP	1955	1955	28	8	2,000	16,000	1,600	12,800
48	Thorold	Welland Canal	STLSA	1932	1932	160	3	5,000	15,000	4,000	12,000
49	Wawaitin	Mattagami	HEPCO	1912	1918	125	2 2	3,450 4,000	14,900	2,500 3,375	11,750
50	Kenora	Winnipeg	OMPP	1923	1924	20	4 6	1,200 1,200	12,000	1,000 1,250	11,500
51	Heely Falls	Trent	HEPCO	1913	1919	73	2 1	5,600 5,600	16,800	3,750 3,000	10,500
52	McPhail Falls	Michipicoten	GLPC	1954	1954	48	2	7,500	15,000	5,000	10,000
53	Upper Notch	Montreal	HEPCO	1930	1930	48	2	6,500	13,000	4,800	9,600
54	Calm Lake	Seine	OMPP	1928	1928	82	2	6,500	13,000	4,675	9,350
55	Sturgeon Falls	Sturgeon	APPC	1902	1964	40.5	1 1 1 1 1 1	2,500 1,000 1,500 1,500 1,500 1,000	9,000	1,800 1,685 1,350 1,685 1,415 1,415	9,350
56	Eddy	Ottawa	EBEC	1909	1912	38	2 1	4,650 4,650	13,950	3,000 3,320	9,320
57	Crystal Falls	Sturgeon	HEPCO	1921	1921	33	4	2,600	10,400	2,020	8,080
58	Ranney Falls	Trent	HEPCO	1922	1926	-	1 2	1,000 5,000	11,000	720 3,600	7,920
59	Chaudière Falls No. 4	Ottawa	OHEC	1931	1931	38	2	5,400	10,800	3,960	7,920
60	Big Eddy	Muskoka	HEPCO	1941	1941	38	2	5,280	10,560	3,825	7,650

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
61	Ragged Rapids	Muskoka	HEPCO	1938	1938	38	2	5,200	10,400	3,825	7,650
62	Sturgeon Falls	Seine	OMPP	1927	1927	62	2	5,000	10,000	3,825	7,650
63	Matabitchuan	Matabitchuan	HEPCO	1910	1910	305	4	3,300	13,200	1,690	6,760
64	Lower Sturgeon	Mattagami	HEPCO	1923	1923	42	2	4,000	8,000	3,200	6,400
65	Smooth Rock Falls	Mattagami	APPC	1916	1916	45	2	4,500	9,000	3,125	6,250
66	Eugenia	Beaver	HEPCO	1915	1920	550	2 1	2,250 4,000	 8,500	1,200 2,400	 4,800
67	Meyerburg (Dam 8)	Trent	HEPCO	1924	1924	32	3	2,200	6,600	1,600	4,800
68	Nairn	Spanish	HCL	1917	1917	30	1 2	2,250 2,600	 7,450	1,500 1,500	 4,500
69	Chaudière Falls No. 2	Ottawa	OHEC	1909	1936	40	3	2,300	6,900	1,462	4,386
70	Peterborough	Otonabee	PHPC	1902	1950	27	1 1 1	2,300 2,550 2,140	 6,990	1,200 1,500 1,400	 4,100
71	Coniston	Wanapitei	HEPCO	1905	1915	53	1 1 1	1,200 1,600 3,500	 6,300	720 1,125 2,250	 4,095
72	Stinson	Wanapitei	HEPCO	1925	1925		2	3,500	7,000	2,000	4,000
73	Calabogie	Madawaska	HEPCO	1917	1917	30	2	3,000	6,000	2,000	4,000
74	Big Chute	Severn	HEPCO	1911	1919	56	3 1	1,300 2,300	 6,200	900 1,280	 3,980
75	South Falls	South Muskoka	HEPCO	1916	1925	107	1 2	1,000 2,200	 5,400	635 1,600	 3,835
76	Wabagishik	Vermilion	HCL	1912	1935	70	1 1	2,700 2,700	 5,400	1,600 2,140	 3,740
77	Swift Rapids	Severn	OWLP	1917	1917	47	3	2,120	6,360	1,200	3,600
78	Minden	Gull	OWLP	1935	1935	70	2	2,600	5,200	1,800	3,600
79	Sandy Falls	Mattagami	HEPCO	1911	1916	32 34	2 1	1,200 2,500	 4,900	950 1,595	 3,495
80	Hagues Reach	Trent	HEPCO	1925	1925	22.5	3	1,600	4,800	1,120	3,360
81	Indian Chute	Montreal	HEPCO	1923	1924	45	2	2,250	4,500	1,620	3,240
82	Sidney	Trent	HEPCO	1911	1911	20	4	1,400	5,600	795	3,180

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
83	Seymour	Trent	HEPCO	1909	1911	23	4	1,100		600	
							1	1,100	5,500	750	3,150
84	Mathias	Muskoka	OWLP	1950	-	47	1	3,770	3,770	2,812	2,812
85	Hound Chute	Montreal	HEPCO	1910	1911	-	4	1,335	5,340	700	2,800
86	Kapuskasing	Kapuskasing	SFPPC	1923	-	30	1	2,500	2,500	2,750	2,750
87	Frankford	Trent	HEPCO	1913	1913	18	4	1,200	4,800	650	2,600
88	Jones Falls	Rideau Canal	GELW	1948	1950	65	1	250		180	
						58	2	1,037		800	
						58	1	1,500	3,824	800	2,580
89	Nassau	Otonabee	CGEC	1902	1926	16	1	2,000		1,500	
							2	700	3,400	480	2,460
90	McVittie	Wanapitei	HEPCO	1912	1912	42	2	1,800	3,600	1,125	2,250
91	High Falls	Mississippi	HEPCO	1920	1920	82	3	1,240	3,720	700	2,100
92	Nipissing	South	HEPCO	1909	1909	-	1	1,250		1,000	
							1	1,250	2,500	1,050	2,050
93	Lakefield	Otonabee	HEPCO	1928	-	16	1	3,100	3,100	2,000	2,000
94	Fountain Falls	Montreal	HEPCO	1914	1914	30	2	1,500	3,000	1,000	2,000
95	Rideau Falls	Rideau	NRC	1909	1909	47	2	1,500	3,000	1,000	2,000
96	Sills Island	Trent	HEPCO	1926	1926	14	1	1,000		960	
							1	1,000	2,000	1,020	1,980
97	Crow Bay	Trent Canal	CPUC	1909	1911	-	1	1,470		1,125	
							1	1,000	2,470	850	1,975
98	Auburn	Otonabee	HEPCO	1911	1912	18	3	950	2,850	625	1,875
99	Current River	Current	PAPUC	1902	1906	80	2	450		350	
							1	1,200	2,100	1,150	1,850
100	Eagle	Eagle	DPC	1928	-	37	1	2,000	2,000	1,760	1,760
101	Trethewey Falls	South Muskoka	HEPCO	1929	-	35	1	2,300	2,300	1,600	1,600
Total capacity of plants under 1,500 kw.									29,826		21,858
Total capacity of turbines connected directly to mechanical equipment									27,375		
Total (all plants)									8,590,585		6,194,016

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
Quebec											
1	Beauharnois: Section 1	St. Lawrence	QHEC	1932	1948	80	8 6	53,000 55,000		37,300 40,000	
	Section 2			1950	1953	80	9 3	55,000 56,000		40,000 41,120	
	Section 3			1959	1961	80	10	73,700	2,154,000	55,250	1,574,260
2	Bersimis I	Bersimis	QHEC	1956	1958	785	8	150,000	1,200,000	114,000	912,000
3	Manic 2	Manicouagan	QHEC	1965	1966	230	7	170,000	1,190,000	126,900	888,300
4	Chute des Passes	Peribonka	ALCAN	1959	1960	540	5	200,000	1,000,000	148,500	742,500
5	Shipshaw	Saguenay	ALCAN	1942	1943	208	2 6 2 2	95,000 103,000 101,000 95,000	1,200,000	58,500 60,000 60,000 60,000	717,000
6	Bersimis II	Bersimis	QHEC	1959	1960	380	5	171,000	855,000	131,000	655,000
7	Carillon	Ottawa	QHEC	1962	1964	61	14	60,000	840,000	46,750	654,500
8	Isle Maligne	Saguenay	SAPC	1925	1937	110	12	45,000	540,000	28,000	336,000
9	McCormick	Manicouagan	MP	1951	1965	124	2 3 2	56,200 60,000 80,000	452,400	35,625 40,000 56,250	303,750
10	Trenche	St. Maurice	QHEC	1950	1955	160	6	65,000	390,000	47,700	286,200
11	Beaumont	St. Maurice	QHEC	1958	1959	124	6	55,000	330,000	40,500	243,000
12	La Tuque	St. Maurice	QHEC	1940	1955	114	5 1	44,500 49,000	271,500	36,000 36,000	216,000
13	Paugan	Gatineau	QHEC	1928	1956	133 132	1 7	47,000 34,000	285,000	32,400 24,225	201,975
14	Chute-à-la-Savane	Peribonka	ALCAN	1953	1953	110	5	57,000	285,000	37,450	187,250
15	Chute-du-Diable	Peribonka	ALCAN	1952	1952	110	5	55,000	275,000	37,450	187,250
16	Rapide Blanc	St. Maurice	QHEC	1934	1955	108	1 5	44,500 40,000	244,500	30,600 30,600	183,600
17	Chute à Caron	Saguenay	ALCAN	1931	1934	160	4	75,000	300,000	45,000	180,000
18	Shawinigan No. 2	St. Maurice	QHEC	1911	1929	146 145 145	3 3 2	43,000 18,500 18,500	221,500	30,000 15,000 14,000	163,000
19	Cedars	St. Lawrence	QHEC	1914	1924	30	12 6	10,800 11,300	197,400	9,000 9,000	162,000

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)											
20	Shawinigan No. 3	St. Maurice	QHEC	1948	1949	145	3	65,000	195,000	50,000	150,000
21	Grand'Mère	St. Maurice	QHEC	1915	1930	80	7 1 1	22,000 22,000 24,500	200,500	15,725 18,000 20,000	148,075
22	Chelsea	Gatineau	QHEC	1927	1939	93	5	34,000	170,000	28,800	144,000
23	La Gabelle	St. Maurice	QHEC	1924	1931	63 63 60	3 1 1	36,000 32,000 32,000	172,000	24,750 24,750 24,750	123,750
24	Manic 1	Manicouagan	QHEC	1966	1966		2	80,000	160,000	61,470	122,940
25	Farmers Rapids	Gatineau	QHEC	1927	1947	66	3 2	24,000 24,000	120,000	20,000 19,125	98,250
26	Masson	Lièvre	MQPC	1933	1933	185	4	34,000	136,000	23,800	95,200
27	Quinze Rapids	Ottawa (Upper)	QHEC	1923	1955	90	2 2 2	12,500 12,500 34,500	119,000	8,000 10,800 26,000	89,600
28	High Falls	Lièvre	MQPC	1930	1936	180	1 3	32,500 30,000	122,500	21,250 21,250	85,000
29	Chats Falls	Ottawa	OVPC	1932	1932	53	4	29,940	119,760	20,000	80,000
30	Rapid VII	Ottawa (Upper)	QHEC	1941	1949	68	4	16,000	64,000	14,250	57,000
31	Bryson	Ottawa	QHEC	1925	1949	60	2 1	25,700 27,000	78,400	18,000 20,000	56,000
32	Murdock Willson	Shipshaw	PBC	1957	-	263	1	82,000	82,000	51,000	51,000
33	Jim Gray	Shipshaw	PBC	1953	1953	338	2	35,000	70,000	25,500	51,000
34	Outardes Falls	Outardes	QNSPC	1937	1937	208	2	35,300	70,600	25,000	50,000
35	Fifty Foot Falls	Hart Jaune	HJP	1960	1960	123	3	22,000	66,000	16,150	48,450
36	Rapid II	Ottawa (Upper)	QHEC	1954	1964	67	4	16,000	64,000	12,000	48,000
37	Montreal Island	Prairies	QHEC	1929	1930	25	6	10,000	60,000	7,500	45,000
38	Dufferin Falls	Lièvre	JMC	1958	1959	62	2	25,000	50,000	19,125	38,250
39	Rapide-des-Îles	Ottawa	QHEC	1966	1966		1	50,000	50,000	37,250	37,250
40	Chicoutimi	Chicoutimi	SMPC	1957	-	273	1	42,000	42,000	32,000	32,000
41	Hemming Falls	St. François	QHEC	1925	1925	50	6	5,600	33,600	4,800	28,800
42	Seven Falls	St. Anne (de Beaupré)	QHEC	1915	1915	410	4	6,000	24,000	4,680	18,720
43	Ste. Marguerite	Marguerite	GPC	1954	1954	100	2	12,000	24,000	8,800	17,600
44	Chaudière No. 2	Ottawa	QHEC	1920	1923	32	3	7,500	22,500	5,760	17,280

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)											
45	Kipawa	Gordon Creek	QHEC	1920	1926	200	2	3,600		2,800	
							2	8,500	24,200	5,760	17,120
46	St. Narcisse	Batiscan	QHEC	1926	1926	147	2	11,100	22,200	7,500	15,000
47	Drummondville	St. François	QHEC	1910	1925	30	2	3,200		2,500	
							2	6,000	18,400	4,800	14,600
48	Chutes aux Galets	Shipshaw	PBC	1921	1921	101	2	8,820	17,640	6,800	13,600
49	Chaudière Falls	Ottawa	EBEC	1913	1955	38	3	5,500	16,500	3,750	11,250
50	Chicoutimi	Chicoutimi	PBC	1923		72	1	11,000	11,000	9,900	9,900
51	Waltham	Black	PELC	1917	1951	129	1	1,800		1,250	
							1	2,250		1,530	
							1	2,500		1,800	
							2	3,000	12,550	2,250	9,080
52	Buckingham	Lièvre	ERC	1914	1939	30	1	2,000		1,375	
							1	2,500		1,836	
							3	2,000	10,500	1,440	7,531
53	Price	Mitis	QHEC	1922	1929	128	1	3,700		2,400	
						120	1	5,900	9,600	4,000	6,400
54	Adam Cunningham	Shipshaw	PBC	1953		56	1	9,500	9,500	6,375	6,375
55	Arnaud Bridge	Chicoutimi	QHEC	1923	1923	56	1	2,500		1,700	
							2	2,500	7,500	1,875	5,450
56	Bell Falls	Rouge	QHEC	1915	1920	54	3	2,400	7,200	1,600	4,800
57	Kenogami	Au Sable	PBC	1912	1912	264	2	3,350	6,700	2,345	4,690
58	Grand Mitis No. 2	Mitis	QHEC	1947		75	1	6,000	6,000	4,250	4,250
59	Jonquière	Au Sable	MJ	1907	1924	42	1	1,800		1,280	
						47	1	4,030	5,830	2,812	4,092
60	Westbury	St. François	CS	1928	1928	28	2	2,900	5,800	2,000	4,000
61	Chaudière	Chaudière	QHEC	1900	1903	114	2	1,400		1,000	
							1	2,000	4,800	1,500	3,500
62	Lachute	North	AL	1929	1929	36	3	1,500	4,500	1,080	3,240
63	Windsor Mills	St. François	DPP	1936	1939	19	2	1,500		1,120	
							1	800		600	
							1	430	4,230	320	3,160
64	Weedon	St. François	CS	1920	1926	30	2	1,700		1,040	
						29	1	1,700	5,100	1,040	3,120
65	St. Alban	Ste. Anne de la Pérade	QHEC	1927		64	1	4,000	4,000	3,000	3,000
66	St. Raphael	Sud	QHEC	1921	1921	232	3	1,500	4,500	850	2,550

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)											
67	Domtar	Jacques Cartier	DT	1960	1962	60	2	1,200	2,400	1,200	2,400
68	MacDougall Falls	Jacques Cartier	DP	1925	1927	50	2	1,900	3,800	1,200	2,400
69	Jonquière Mill	Au Sable	PBC	1916	1916	67	1 1	1,800 1,625	 3,425	1,200 1,200	 2,400
70	Winneway	Winneway (Upper Ottawa)	LMC	1938	1943	57	2	1,400	2,800	1,169	2,338
71	Ogilvie Flour Mills	Lachine Canal	OFM	1940	1948	23 15	2 2	1,600 400	 4,000	850 300	 2,300
72	Mont Laurier	Lièvre	EML	1937	1951	22	1 2	500 1,325	 3,150	500 900	 2,300
73	Sherbrooke	Magog	QHEC	1910	1910	57	3	1,333	4,000	752	2,256
74	Garneau Falls	Chicoutimi	QHEC	1928	-	30	1	3,450	3,450	2,240	2,240
75	Magog	Magog	DTC	1920	1920	25	2	1,500	3,000	1,000	2,000
76	Corbeau	Gatineau	QHEC	1926	1926	12	2	1,250	2,500	1,000	2,000
77	Bird's Mill Falls	Jacques Cartier	DP	1937	-	27	1	2,250	2,250	1,920	1,920
78	Rock Forest	Magog	CS	1911	1911	30	2	1,500	3,000	940	1,880
79	Rivière-du-Loup	Du Loup	CRL	1929	1942	100	1 1	960 1,800	 2,760	640 1,200	 1,840
80	Magpie	Magpie	QHEC	1961	1961	27	2	1,500	3,000	900	1,800
81	Rawdon	Ouareau	QHEC	1927	-	50	1	2,300	2,300	1,720	1,720
82	Frontenac	Magog	CS	1917	1917	38	2	1,450	2,900	800	1,600
83	Burroughs Falls	Nigger	QHEC	1929	-	175	1	2,000	2,000	1,600	1,600
Total capacity of plants under 1,500 kw.									39,393	27,238	
Total capacity of turbines connected directly to mechanical equipment									59,365		
Total (all plants)									14,855,538	10,745,690	

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

New Brunswick

1	Beechwood	Saint John	NBEP	1957	1962	57	2	45,000		36,000	
							1	55,000	145,000	40,500	112,500
2	Grand Falls	Saint John	NBEP	1928	1931	125	4	20,000	80,000	15,750	63,000
3	Tinker	Aroostook	MNBP	1906	1965	85	2	2,000		1,500	
							2	5,000		3,520	
							1	33,000	47,000	20,800	30,840
4	Tobique	Tobique	NBEP	1953	1953	75	2	13,500	27,000	10,000	20,000
5	Bathurst	Nepisiguit	BPPC	1921	1929	108	2	5,000		3,600	
						110	1	5,500	15,500	3,600	10,800
6	Sisson	Tobique	NBEP	1965	1965	135	1	12,500	12,500	10,000	10,000
7	Musquash	Musquash	NBEP	1920	1920	99.5	2	3,670		2,320	
						124.5	1	3,760	11,100	2,320	6,960
8	Milltown	St. Croix	NBEP	1911	1962	21	3	1,080		770	
						25	1	500		376	
							1	468	4,208	350	3,036
9	Edmundston	Madawaska	FC	1918	1918	21.1	2	1,030	2,060	1,000	2,000

Total capacity of plants under 1,500 kw.

3,025

2,500

Total capacity of turbines connected directly to mechanical equipment

5,000

Total (all plants)

352,393

261,636

Nova Scotia

1	Deep Brook	Mersey	NSPC	1950	1950	46	2	6,400	12,800	4,500	9,000
2	Big Falls	Mersey	NSPC	1929	1929	58	2	6,350	12,700	4,500	9,000
3	Weymouth Falls	Sissiboo	NSPC	1960	-	122	1	12,000	12,000	9,000	9,000
4	Lower Lake Falls	Mersey	NSPC	1929	1929	48.5	2	5,300	10,600	3,690	7,380
5	Cowie Falls	Mersey	NSPC	1937	1937	43	2	5,100	10,200	3,600	7,200
6	Ruth Falls	East, Sheet Harbour	NSPC	1927	1936	110	2	3,290		2,000	
						109	1	4,300	10,880	2,970	6,970
7	Hells Gates	Black	NSLPC	1930	1949	185	1	4,500		3,360	
							1	4,500	9,000	3,570	6,930
8	Nictaux	Nictaux	NSLPC	1954	-	382	1	9,000	9,000	6,800	6,800
9	Gulch	Bear	NSPC	1956	-	225	1	8,500	8,500	6,000	6,000
10	Sissiboo Falls	Sissiboo	NSPC	1960	-	87	1	8,000	8,000	6,000	6,000
11	Upper Lake Falls	Mersey	NSPC	1929	1929	31.5	2	3,000	6,000	2,700	5,400
12	Hollow Bridge	Black	NSLPC	1940	-	148	1	7,500	7,500	5,312	5,312

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

NOVA SCOTIA (Cont'd)

13	Tidewater	North East	NSPC	1921	1921	91.5	2	3,450	6,900	2,320	4,640
14	Lower Great Brook	Mersey	NSPC	1955	1955	22	2	3,120	6,240	2,250	4,500
15	Ridge	Bear	NSPC	1957	-	140	1	5,300	5,300	4,000	4,000
16	Dickie Brook	Dickie Brook	NSPC	1948	1948	298	1	1,750		1,200	
							1	1,750	3,500	2,600	3,800
17	Avon No. 1	Avon	NSLPC	1958	-	117.5	1	5,000	5,000	3,750	3,750
18	Malay Falls	East, Sheet Harbour	NSPC	1924	1954	43	2	1,850		1,200	
						41	1	1,740	5,440	1,200	3,600
19	Paradise	Paradise Brook	NSLPC	1950	-	465	1	5,000	5,000	3,600	3,600
20	Methal's	Methal's Brook	NSLPC	1949	-	45	1	4,600	4,600	3,400	3,400
21	Sandy Lake	North East	NSPC	1927	1927	118	2	2,500	5,000	1,600	3,200
22	White Rock	Gasperaux	NSLPC	1952	-	58	1	4,000	4,000	3,200	3,200
23	St. Croix	St. Croix	MBPP	1934	-	148	1	4,200	4,200	3,000	3,000
24	Avon No. 2	Avon	NSLPC	1929	-	142	1	3,900	3,900	3,000	3,000
25	Lumsden	Black	NSLPC	1942	-	72	1	4,500	4,500	2,800	2,800
26	Mill Lake	North East	NSPC	1921	1921	162.5	2	1,900	3,800	1,280	2,560
27	Tusket	Tusket	NSPC	1929	1929	18	3	940	2,820	720	2,160
28	Salmon Hole	St. Croix	MBPP	1938	-	75	1	2,500	2,500	2,000	2,000

Total capacity of plants under 1,500 kw.

6,550

4,708

Total capacity of turbines connected directly to mechanical equipment

Total (all plants)

196,430

142,910

Newfoundland

1	Twin Falls	Unknown	TFPC	1962	1963	290	4	60,000	240,000	46,800	187,200
2	Deer Lake	Humber	BPC	1925	1930	247	7	16,000		11,100	
							2	29,000	170,000	20,000	117,700
3	Grand Falls	Exploits	PPP	1909	1938	109	3	2,500		1,500	
							1	36,000	43,500	26,000	30,500
4	Menihek	Ashuanipi (Labrador)	IOCC	1954	1960	34	2	6,000		4,250	
						40	1	13,500	25,500	10,200	18,700
5	Bishops Falls	Exploits	PPP	1909	1952	35	7	2,700		2,025	
							2	1,700	22,300	1,500	17,175

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
NEWFOUNDLAND (Cont'd)											
6	Rattling Brook	Rattling Brook	NLPC	1958	1958	307	2	8,500	17,000	6,375	12,750
7	Mobile	Mobile	NLPC	1951	-	370	1	13,000	13,000	9,350	9,350
8	Watson's Brook	Corner Brook	BPC	1958	1958	559	2	6,000	12,000	4,600	9,200
9	Horse Chops	Horse Chops	NLPC	1953	-	276	1	10,000	10,000	7,650	7,650
10	Tors Cove	Tors Cove	NLPC	1942	1951	173	2	2,850		2,000	
							1	3,550	9,250	2,500	6,500
11	Cape Broyle	Horse Chops	NLPC	1952	-	176	1	7,600	7,600	6,000	6,000
12	Sandy Brook	Sandy Brook	NLPC	1963	-	115	1	8,000	8,000	5,950	5,950
13	Lookout Brook	Lookout Brook	WCPC	1945	1958	575	2	1,850		1,400	
							1	3,600	7,300	2,400	5,200
14	Petty Harbour	Petty Harbour	NLPC	1908	1926	190	2	2,100		1,600	
							1	2,750	6,950	1,800	5,000
15	New Chelsea	New Chelsea Brook	NLPC	1957	-	275	1	5,600	5,600	4,000	4,000
16	Seal Cove	Seal Cove	NLPC	1922	1927	190	1	1,500		1,200	
							1	3,040	4,540	2,400	3,600
17	Pierres Brook	Pierres Brook	NLPC	1931	-	263	1	4,500	4,500	3,200	3,200
18	Rocky Pond	Tors Cove	NLPC	1943	-	107	1	4,200	4,200	3,200	3,200
19	Lockston	Lockston	NLPC	1956	1961	270	2	2,000	4,000	1,480	2,960
20	Hearts Content	Hearts Content Brook	NLPC	1960	-	150	1	3,600	3,600	2,400	2,400
21	Buchans Brook	Buchans Brook	ASRC	1927	-	163	1	2,359	2,359	1,760	1,760
Total capacity of plants under 1,500 kw.									7,690		5,440
Total capacity of turbines connected directly to mechanical equipment									22,000		
Total (all plants)									650,889		465,435

Canada (TOTAL HYDRO CAPACITY) 22,657,000



Thunder Bay thermal plant.

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Burrard	Vancouver	BCHPA	1962	1965	Gas, oil	S	3	162,000	486,000
2	Port Mann	New Westminster	BCHPA	1959	1959	Oil	GT	4	25,000	100,000
3	Georgia	Chemainus	BCHPA	1958	1959	Oil	GT	2 2	19,750 18,000	75,500
4	Watson Island	Watson Island	CCC	1950	1966	Oil, wood-waste	S	2 1	7,500 34,560	49,560
5	Harmac	Nanaimo	MBPR	1954	1963	Oil, wood-waste	S	1 1 1	31,500 4,000 1,250	36,750
6	Somass Mill	Port Alberni	MBPR	1963	-	Wood-waste	S	1	26,000	26,000
7	Prince George	Prince George	BCHPA	1957	1963	Oil	IC	7	3,000	21,000
8	Dawson Creek	Dawson Creek	BCHPA	1953	1963	Gas, oil	IC	2 6	1,000 3,000	20,000
9	Port Alice	Port Alice	RC	1942	1957	Oil, wood-waste	S	1 2 1	3,200 3,500 6,000	16,200
10	Chetwynd	Chetwynd	BCHPA	1958	1965	Gas, oil	IC	2 1 1 4	600 800 1,000 3,000	15,000
11	Powell River	Powell River	MBPR	1948	1960	Wood-waste, oil	S	1 1 1 1	1,350 1,200 10,500 1,875	14,925
12	Ocean Falls	Ocean Falls	CZC	1930	1950	Oil, wood-waste	S	1 1 1 1	3,000 2,000 4,000 5,000	14,000
13	New Westminster	New Westminster	CZB	1912	1950	Wood-waste	S	1 1 1	5,000 1,500 6,000	12,500
14	Eburne Sawmills	Vancouver	CFP	1960	1960	Wood-waste	S	2	5,750	11,500
15	Kitimat	Kitimat	ALCAN	1954	1959	Oil	IC	8	1,000	8,000
16	Taylor	Taylor	PP	1957	1957	Gas	S	3	2,500	7,500
17	Kelowna	Kelowna	SMS	1950	1963	Wood-waste, oil, coal	S	1 1 1 1	750 2,000 3,500 1,000	7,250

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
BRITISH COLUMBIA (Cont'd)										
18	Woodfibre	Woodfibre	RC	1948	1961	Oil, wood, waste	S	2 1	2,000 3,000	7,000
19	Smithers	Smithers	BCHPA	1951	1965	Oil	IC	2 1 2 1	560 760 1,000 3,000	6,880
20	Dry Dock	Prince Rupert	BCHPA	1950	1963	Oil	IC	3 1 1	800 1,970 2,034	6,404
21	Mica Creek	Mica	BCHPA	1965	1965	Oil	IC	1 2 1 2	675 1,000 2,500 500	6,175
22	Port Mellon	Port Mellon	CFP	1928	1947	Oil	S	1 1 1	500 1,500 3,000	5,000
23	Semi-mobile unit No. 87		BCHPA	1965	-	Oil	IC	1	5,000	5,000
24	Cassiar	Cassiar	CAC	1952	1966	Oil	IC	3 2 1 1 1 1	300 350 450 650 1,200 900	4,800
25	Vancouver	Vancouver	MBPR	1949	1956	Wood-waste	S	1 1	750 4,000	4,750
26	Kimberley (Stand-by)	Kimberley	CMSC	1927	1928	Coal	S	3	1,500	4,500
27	Victoria	Victoria	BCFP	1940	1950	Wood-waste	S	1 1	3,000 1,500	4,500
28	Youbou	Youbou	BCFP	1929	1958	Wood-waste	S	1 2 1	800 750 2,000	4,300
29	Giscome	Giscome	ELS	1951	1956	Wood-waste, oil	S IC	1 1 1	1,500 2,400 300	4,200
30	Burns Lake	Burns Lake	BCHPA	1954	1965	Oil	IC	1 4 2	800 250 1,136	4,072
31	Elk Falls	Campbell River	EFC	1964	1965	Wood-waste	S	1 1	3,255 800	4,055
32	Hammond	Hammond	BCFP	1928	1929	Wood-waste	S	2	2,000	4,000
33	Chemainus	Chemainus	MBPR	1925	1950	Wood-waste, oil	S	1 1	3,000 750	3,750

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
BRITISH COLUMBIA (Cont'd)										
34	Vancouver	Vancouver	BCSRC	1947	1960	Gas, oil	S	3	1,250	3,750
35	Jedway	Jedway	JIOC	-	-	Oil	IC	3 1	1,000 225	3,225
36	Fort Nelson	Fort Nelson	BCHPA	1960	1960	Oil, gas	IC	1 1 1 1 1	1,200 600 261 100 1,000	3,161
37	Honeymoon Bay	Honeymoon Bay	WFI	1949	1961	Oil	S	1 1	1,000 1,760	2,760
38	Port Hardy	Port Hardy	BCHPA	1959	1965	Oil	IC	1 1 2 1	600 500 300 1,000	2,700
39	Mesachie Lake	Mesachie Lake	HLC	1943	1949	Wood-waste	S	1 1 1	1,600 750 260	2,610
40	Endako	Endako	EM	1964	1964	Oil	IC	1 1	1,250 1,000	2,250
41	Hazelton	Hazelton	BCHPA	1965	1965	Oil	IC	3 2 1	200 600 250	2,050
42	Valemount	Valemount	BCHPA	1962	1966	Oil	IC	3 1 1	350 500 500	2,050
43	Revelstoke	Revelstoke	COR	1926	1954	Oil	IC	2 1 1	300 400 1,000	2,000
44	Wells	Wells	CGQM	1936	1955	Oil	IC	1 2 1 2 2	350 300 125 250 150	1,875
45	Tide Camp	Stewart	GM	1965	1965	Oil	IC	2 2	500 400	1,800
46	McBride	McBride	BCHPA	1951	1957	Oil, gas	IC	3	600	1,800
47	Sandspit	Queen Charlotte Islands	BCHPA	1962	1966	Oil	IC	2 1	600 500	1,700
48	Vanderhoof	Vanderhoof	BCHPA	1953	1955	Oil	IC	1 1	600 1,000	1,600
Total capacity of plants 1,500 kw. and over (not listed above)										7,500
Total capacity of plants under 1,500 kw.										39,400
Total (all plants)										1,083,302

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

Northwest Territories

1	Frobisher Bay	Frobisher Bay	NCPC	1963	1966	Oil	IC	1	1,000	3,960
								1	960	
								1	500	
2	Port Radium	Port Radium	EMR	1936	1953	Oil	IC	1	1,500	3,639
								2	150	
								1	864	
3	Inuvik	Inuvik	NCPC	1957	1963	Oil	IC	2	375	3,460
								1	150	
								1	960	
4	Fort Smith	Fort Smith	NCPC	1956	1962	Oil	IC	1	1,000	3,232
								1	392	
								1	960	
5	Hay River	Hay River	NU					1	275	1,975
								1	300	
								1	650	
6	Tungsten	Tungsten	CTMC	1962	1962	Oil	IC	1	500	1,500
								1	250	
								3	500	

Total capacity of plants 1,500 kw. and over (not listed above)

Total capacity of plants under 1,500 kw.

9,662

Total (all plants)

27,248

Yukon Territory

Total capacity of plants 1,500 kw. and over

Total capacity of plants under 1,500 kw.

4,500

Total (all plants)

4,500

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Edmonton	Edmonton	CE	1939	1966	Gas, oil	S	2	15,000	405,000
								3	30,000	
								2	75,000	
							GT	2	30,000	
							S	1	75,000	
2	Wabamun	Wabamun	CP	1956	1962	Gas, coal	S	2	66,000	282,000
								1	150,000	
3	Battle River	Forestburg	CU	1956	1964	Coal, oil	S	2	33,000	66,000
4	Vermilion	Vermilion	CU	1948	1961	Gas	S	4	2,250	39,000
							GT	1	30,000	
5	Medicine Hat	Medicine Hat	CMH	1929	1953	Gas	S	1	3,000	38,000
								1	5,000	
								1	30,000	
6	Lethbridge	Lethbridge	CL	1931	1961	Gas	S	1	3,375	33,375
								2	5,000	
							GT	2	10,000	33,375
7	Fort McMurray	Fort McMurray	GCOS	1966	1966		S	1	30,500	30,500
8	Hinton	Hinton	NWPP	1956	1957	Gas, wood-waste, oil	S	1	20,000	22,100
							IC	1	1,100	
								1	1,000	
9	Clover Bar	Edmonton	C	1953	1966	Gas	S	3	6,000	22,000
								1	4,000	
10	Simonette	Simonette	CU	1966	-	Flare gas	GT	1	20,000	20,000
11	Sturgeon	Valleyview	CU	1958	1961	Flare gas	GT	1	10,000	18,500
								1	8,500	
12	Drumheller	Drumheller	CU	1928	1952	Coal	S	2	7,500	17,500
								1	2,500	
13	Two Hills	Duvernay	WC	1953	1958	Gas	S	3	300	13,537
								1	1,200	
							IC	6	500	
							GT	1	8,437	
14	Sentinel	Coleman	EKPC	1927	1929	Coal	S	2	5,000	10,000
15	Edmonton	University	DPW	1960	1963	Gas	GT	1	2,200	9,200
							S	1	5,000	
							S	1	2,000	

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
16	Fairview	Fairview	NU	1954	1960	Gas	IC	3	3,000	9,000
17	Fort Saskatchewan	Fort Saskatchewan	SGM	1954	1959	Gas	S	2	2,500	5,000
18	Whitecourt	Whitecourt	PAPC	1958	1964	Gas	IC	2 5	300 800	4,600
19	Fort McMurray	Fort McMurray	CU	1954	1966	Oil	IC	2 2 1 1 2	500 350 225 150 1,200	4,475
20	Rimbey	Rimbey	BA	1960	1963	Gas	S	4	1,000	4,000
21	Grande Prairie	Grande Prairie	CU	1948	1955	Gas, oil	IC	1 1 1	800 600 2,500	3,900
22	Taber	Taber	CSF	1950	1960	Gas, oil	S	1 1	2,000 1,675	3,675
23	Glenmore Filter Plant	Calgary	COC	1965	1965		S	2	1,800	3,600
24	Jasper	Jasper	NU	1941	1964	Oil	IC	1 1 1 1 1	1,200 474 96 500 300	2,570
25	Foot Hills Hospital	Calgary	COC	1965	1965		S	2	1,000	
						Diesel	IC	1	450	2,450
26	High Level	High Level	NU	1959	1966	Oil	IC	2 3 1	500 350 300	2,350
27	Edmonton	Legislative Bldg.	DPW	1953	1965	Gas	S	2 1	800 500	2,100
28	Picture Butte	Picture Butte	CSF	-	1964	Gas	S	1 1	1,250 750	2,000
29	Athabasca	Athabasca	CP	1953	1961	Gas	IC	1 2	1,200 300	1,800
30	Edmonton	Alberta Hospital	DPW	1929	1954	Gas	S	1 1 1 1	600 500 300 200	1,600

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
ALBERTA (Cont'd)										
31	Worsley	Worsley	NU	1963	1963		IC	1 1	864 650	1,514
Total capacity of plants 1,500 kw. and over (not listed above)										4,000
Total capacity of plants under 1,500 kw.										10,568
Total (all plants)										1,095,914

Saskatchewan

1	Boundary Dam	Estevan	SPC	1959	1960	Coal	S	2	66,000	132,000
2	Queen Elizabeth	Saskatoon	SPC	1958	1959	Gas, oil, coal	S	2	66,000	132,000
3	A.L. Cole	Saskatoon	SPC	1929	1957	Coal, oil, gas	S	1 1 2 1	10,000 15,000 25,000 30,000	105,000
4	Regina	Regina	SPC	1925	1960	Oil, gas	S GT	1 1 1 1 1	15,000 5,000 20,000 30,000 23,500	93,500
5	Estevan	Estevan	SPC	1929	1957	Coal, gas	S	1 1 1 1	5,000 15,000 20,000 30,000	70,000
6	Kindersley	Kindersley	SPC	1955	1958	Gas	IC GT	3 2	3,000 10,000	29,000
7	Moose Jaw	Moose Jaw	SPC	1930	1952	Oil, gas	S	1 1	10,000 15,000	25,000
8	Success	Success	SPC	1966	1966	Gas	GT	1	15,400	15,400
9	Kalium	Kalium	KC	1964	1964	Gas	S	2	7,500	15,000
10	Swift Current	Swift Current	SPC	1954	1957	Oil	IC	2 4	1,275 3,000	14,550
11	Eldorado	Eldorado	EMR	1952	1956	Oil	IC	4	2,250	9,000

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

SASKATCHEWAN (Cont'd)

12	Flin Flon	Flin Flon. (Saskatchewan)	HBMS	1929	1951	Coal, oil	S	1 1	1,000 6,000	7,000
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Total capacity of plants 1,500 kw. and over (not listed above) 10,000

Total capacity of plants under 1,500 kw. 4,143

Total (all plants) 661,593

Manitoba

1	Brandon	Brandon	MH	1957	1958	Coal, gas, oil	S	4	33,000	132,000
2	Selkirk	Selkirk	MH	1960	1960	Coal, oil	S	2	66,000	132,000
3	Amy Street	Winnipeg	WH	1924	1954	Coal	S	2 1 1	5,000 15,000 25,000	50,000
4	The Pas	The Pas	MH	1948	1962	Oil	IC	1 4 1 1	1,100 1,000 750 400	6,250
5	Churchill	Churchill	NHB	1931	1955	Grain refuse, oil, coal	S IC	2 1 1 1	1,500 600 200 250	4,050
6	Fort Garry	Winnipeg	MSC	1940	1953	Oil	S	1 1	1,500 2,500	4,000
7	Thompson	Thompson	INCO	-	1958	Oil	IC	2	1,500	3,000

Total capacity of plants 1,500 kw. and over (not listed above) 4,000

Total capacity of plants under 1,500 kw. 3,016

Total (all plants) 338,316

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Lakeview	Toronto	HEPCO	1961	1966	Coal, Oil	S GT	5 4	300,000 7,500	1,530,000
2	Richard L. Hearn	Toronto	HEPCO	1951	1966	Coal, Oil	S GT	4 4	100,000 200,000 7,500	1,230,000
3	J. Clark Keith	Windsor	HEPCO	1951	1953	Coal	S	4	66,000	264,000
4	Douglas Point	Kincardine	HEPCO	1966	1966	Uranium dioxide	S	1	200,000	200,000
5	Thunder Bay	Fort William	HEPCO	1963	-	Coal	S	1	100,000	100,000
6	Detweiler	Kitchener	HEPCO	1966	1966	Oil	GT	4	16,320	65,280
7	A. W. Manby	Toronto	HEPCO	1965	1966	Oil	GT	4	16,320	65,280
8	Windsor	Windsor	FMCC	1936	1952	Coal	S	1 1 2	10,000 4,000 25,000	64,000
9	Sarnia-Scott	Sarnia	HEPCO	1965	1966	Oil	GT	2 2	15,000 16,320	62,640
10	Sarnia	Sarnia	PC	1943	1956	Coal, oil	S	1 1 1 1	10,000 5,000 4,000 13,280	32,280
11	Fort William	Fort William	GLPAC	1928	-	Gas, coal, wood-waste	S	1 1 1	4,000 5,000 17,100	26,100
12	Sault Ste. Marie	Sault Ste. Marie	ASC	1942	1963	Gas, oil, coal	S	2 2	12,500 500	26,000
13	Kapuskasing	Kapuskasing	SFPPC	1928	1958	Coal, gas, wood-waste	S	2 1 1	650 12,500 9,100	22,900
14	Nuclear Power Demonstration Unit	Rolphton	AECL	1962	-	Uranium dioxide	S	1	20,000	20,000
15	Marathon	Marathon	MCC	1946	1948	Coal, oil	S	1 2	7,500 4,000	15,500
16	Lambton	Sarnia	HEPCO	1966	1966	Oil	GT	2	7,500	15,000
17	Hamilton	Hamilton	SCC	1948	1959	Coke-oven gas, oil	S	1 1	4,000 6,000	10,000
18	Amherstburg	Amherstburg	BRMC	1938	1957	Coal	S	1 1 1	2,500 2,000 3,750	8,250
19	Thorold	Thorold	OPC	1937	1937	Coal, gas	S	2	4,000	8,000

GT - Gas Turbine, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)										
20	Dryden	Dryden	DPC	1954	-	Coal, gas	S	1	6,000	6,000
21	Walkerville	Walkerville	HWS	1924	1955	Coal	S	2 1 1	1,000 2,500 625	5,125
22	Sault Ste. Marie	Sault Ste. Marie	APPC	1927	-	Coal, gas, wood-waste	S	1	3,500	3,500
23	Strathcona	Strathcona	SP	1955	1955	Coal	S	2	1,655	3,310
24	Chatham	Chatham	CDSC	1946	1946	Coal	S	2	1,500	3,000
25	Fort Frances	Fort Frances	OMPP	1927	-	Coal	S	1	3,000	3,000
26	Blind River	Blind River	MFLC	1927	1927	Wood-waste	S	1 1	750 2,000	2,750
27	Station No. 6	Gananoque	GELW	1959	1959	Gas	IC	2	1,360	2,720
28	Toronto	Toronto	CDSC	1959	-	Coal, gas, oil	S	1	2,500	2,500
29	Toronto	Toronto	CCCC	1937	-	Coal, oil	S	1	2,500	2,500
30	Ottawa	Ottawa	EBEC	1923	-	Coal	S	1	2,500	2,500
31	Port Arthur	Port Arthur	APPC	1928	-	Coal, wood-waste, gas	S	1	2,500	2,500
32	New Toronto	New Toronto	GTR	1940	-	Coal, oil	S	1	2,500	2,500
33	Pembroke	Pembroke	PELC	1929	1949	Oil	IC	1 2	933 671	2,275
34	Orillia	Orillia	OWLP	1947	1948	Oil	IC	1 1	1,000 1,136	2,136
35	Peterborough	Peterborough	CGEC	1930	1949	Coal	S	1	2,000	2,000
36	Espanola	Espanola	KVPC	1947	1951	Coal	S	1	2,000	2,000
Total capacity of plants 1,500 kw. and over (not listed above)										94,450
Total capacity of plants under 1,500 kw.										12,840
Total (all plants)										3,922,836

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
Quebec										
1	Tracy	Tracy	QHEC	1964	-	Oil	S	2	150,000	300,000
2	Les Boules	Les Boules	QHEC	1955	1960	Oil	GT	6	6,000	36,000
3	Chandler	Chandler	GPP	1930	1954	Oil	S	1 1 1	6,000 2,500 4,000	12,500
4	Noranda	Noranda	NM	1934	1957	Waste heat	S	1 1 1	2,600 3,000 4,500	10,100
5	Drummondville	Drummondville	CCL	1935	1953	Coal, oil	S	1 1 1 1	1,500 2,500 3,500 2,000	9,500
6	Murdochville	Murdochville	GCM	1952	1955	Oil, waste heat	S IC	1 2 1	5,400 1,000 300	7,700
7	Thurso	Thurso	TPPC	1957	-	Coal, oil, wood-waste	S	1	7,500	7,500
8	Quebec City	Quebec City	ACPP	1927	-	Oil	S	1	7,500	7,500
9	Cap aux Meules	Îles-de-la-Madeleine	QHEC	1953	1964	Oil	IC	1 3 1	1,065 1,000 1,200	5,265
10	Magog	Magog	DTC	1938	1948	Coal	S	2	2,000	4,000
11	Gatineau	Gatineau	CIPC	1927	1927	Coal	S	4	900	3,600
12	Montreal	Montreal	CDSC	1925	1947	Gas, oil	S	2 1	1,000 1,500	3,500
13	Schefferville	Schefferville	IOCC	1956	1956	Oil	IC	3	1,000	3,000
14	Three Rivers	Three Rivers	CIPC	1922	1925	Coal, oil, wood-waste	S	6	500	3,000
15	Havre St. Pierre	Havre St. Pierre	REC	1950	1963	Oil	IC	1 1 3	1,000 500 300	2,400
16	Port and Terminal (Stand-by)	Port Cartier	QCMC	1960	1960	Oil	IC	2 1	1,000 350	2,350
17	Lac Jeannine (Stand-by)	Gagnon	QCMC	1960	1960	Oil	IC	2	1,000	2,000
18	Rivière-du-Loup	Rivière-du-Loup	CRL	1947	1953	Oil	IC	2 1	240 1,360	1,840
Total capacity of plants 1,500 kw. and over (not listed above)										7,250
Total capacity of plants under 1,500 kw.										11,512
Total (all plants)										440,517

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Courtenay Bay	East Saint John	NBEPC	1961	1966	Oil	S	1 1 1	50,000 12,600 110,000	172,600
2	Grand Lake No. 2	Newcastle Creek	NBEPC	1951	1963	Coal	S	2 1 1	5,000 15,000 60,000	85,000
3	Chatham	Chatham	NBEPC	1948	1956	Coal, oil	S	1 1	12,500 20,000	32,500
4	Lancaster	Lancaster	IPP	1947	1960	Oil	S	1 1 1	2,000 10,000 12,500	24,500
5	Bathurst	Bathurst	BPPC	1937	1958	Coal, oil	S	1 1 1	6,000 7,600 7,000	20,600
6	Edmundston	Edmundston	FC	1949	1958	Coal, wood- waste	S	1 1 1	3,000 3,800 12,500	19,300
7	Dalhousie	Dalhousie	NBIPC	1929	1937	Coal	S	1 1 2 2	6,000 8,000 800 750	17,100
8	Grand Lake No. 1	Newcastle Creek	NBEPC	1931	1944	Coal	S	1 1 1	2,500 6,250 7,500	16,250
9	Dock Street	Saint John	NBEPC	1929	1947	Coal, oil	S	1 1	6,000 10,000	16,000
10	Atholville	Atholville	FC	1929	1956	Coal, wood- waste	S	4 1 1	1,000 2,000 5,000	11,000
11	Newcastle	Newcastle	FC	1949	1949	Coal	S	1 1	2,000 2,500	4,500
12	Saint John	Saint John	ASR	1954	1962	Oil	S	1 1	2,500 1,000	3,500
13	Edmundston	Edmundston	ME	1947	1955	Oil	IC	2 1	690 1,876	3,256
14	Campbellton	Campbellton	CC	1946	1953	Oil	IC	1 1 1	240 1,136 1,360	2,736
15	Grand Manan	Grand Manan	NBEPC	1957	1965	Oil	IC	1 1 1 1	200 250 700 500	1,650

Total capacity of plants 1,500 kw. and over (not listed above)

Total capacity of plants under 1,500 kw.

2,100

Total (all plants)

432,592

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

Nova Scotia

1	Lower Water Street	Halifax	NSLPC	1944	1959	Coal, oil	S	1 2 1 2	12,500 20,000 25,000 45,000	167,500
2	Glace Bay	Glace Bay	SPCL	1932	1966	Coal	S	2 4 1	6,000 15,000 36,000	108,000
3	Tufts Cove	Tufts Cove	NSLPC	1965	-	-	S	1	100,000	100,000
4	Trenton	Trenton	NSPC	1951	1959	Coal	S	2 2	10,000 20,000	60,000
5	Sydney	Sydney	DOSCO	1919	1943	Coal, oil, gas	S	1 2 1 1	7,600 3,000 5,000 16,000	34,600
6	Harrison Lake	Maccan	NSPC	1926	1949	Coal	S	1 1 1 1	15,000 6,250 1,600 4,000	26,850
7	Port Hawkesbury	Point Tupper	NSP	1962	-	Coal	S	1	10,000	10,000
8	Brooklyn	Brooklyn	BMPC	1943	-	Oil, wood-waste	S	1	5,170	5,170
9	Dartmouth	Dartmouth	IOCL	1965	-	Oil		1	3,750	3,750
10	King Street	Yarmouth	NSLPC	1937	1948	Oil	IC	1 1 2	320 400 600	1,920

Total capacity of plants 1,500 kw. and over (not listed above) 5,200

Total capacity of plants under 1,500 kw. 1,778

Total (all plants) 524,768

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

Prince Edward Island

1	Charlottetown	Charlottetown	MEC	1931	1963	Oil	S	1	1,500	50,500
								1	4,000	
								2	7,500	
								1	10,000	
								1	20,000	
2	Summerside	Summerside	MS	1940	1963	Oil	IC	1	200	6,890
								2	250	
								1	555	
								1	1,135	
								2	2,250	

Total capacity of plants 1,500 kw. and over (not listed above)

-

Total capacity of plants under 1,500 kw.

100

Total (all plants)

57,490

Newfoundland

1	St. John's	St. John's	NLPC	1957	1959	Oil	S	1	10,000	30,000
								1	20,000	
2	Corner Brook	Corner Brook	BPC	1966	-	Gas	GT	1	25,000	25,000
3	Holyrood	Holyrood	NPC	1966	-	Gas	GT	1	12,500	12,500
4	Grand Falls	Grand Falls	PPP	1930	1931	Oil	S	2	5,000	10,000
5	Tilt Cove	Tilt Cove	TCPC	1960	-	Oil	S	1	5,000	5,000
6	Wabush Lake	Wabush Lake	WML	-	1963	Oil	IC	4	1,000	4,000
7	Labrador City	Carol Lake	IOCC	-	-	Oil	-			3,910
8	Gander (Stand-by)	Gander	DOT	1948	1962	Oil	IC	3	1,000	3,000
9	St. John's	St. John's	NLPC	1956	-	Oil	IC	1	2,500	2,500
10	Port aux Basques	Port aux Basques	WCPC	1945	1964	Oil	IC	3	350	1,935
								2	250	
								1	85	
								1	300	
11	Salt Pond	Salt Pond	NLPC	1964	1964	Oil	IC	3	500	1,500

Total capacity of plants 1,500 kw. and over (not listed above)

4,000

Total capacity of plants under 1,500 kw.

9,392

Total (all plants)

112,737

Canada

(TOTAL THERMAL CAPACITY)

8,701,813

GT - Gas Turbine, IC - Internal Combustion, S - Steam

OWNER CODE INDEX

This index provides an explanation of the code letters used in the "Owner" column of the preceding tables. The following abbreviations are used for the names of the provinces and territories of Canada:

British Columbia.....BC
Alberta..... Alta
Saskatchewan..... Sask
Manitoba..... Man
Ontario..... Ont
Québec..... Qué

New Brunswick..... NB
Nova Scotia..... NS
Prince Edward Island.....PEI
Newfoundland..... Nfld
Yukon Territory.....YT
Northwest Territories... NWT

CODE	OWNER	DEVELOPMENTS LOCATED IN
ACL.	Anaconda Company (Canada) Limited.	BC
ACPP.	Anglo-Canadian Pulp and Paper Mills Limited.	Qué
AECL.	Atomic Energy of Canada Limited.	Ont
AL.	Ayers Limited.	Qué
ALCAN.	Aluminum Company of Canada Limited.	BC, Qué
APPC.	Abitibi Power and Paper Company Limited.	Ont
ASC.	Algoma Steel Corporation Limited.	Ont
ASR.	Atlantic Sugar Refineries.	NB
ASRC.	American Smelting and Refining Company Limited.	Nfld
BA.	British American Oil Company.	Alta
BCFP.	British Columbia Forest Products Limited.	BC
BCHPA.	British Columbia Hydro and Power Authority.	BC
BCSRC.	British Columbia Sugar Refining Company Limited.	BC
BMPC.	Bowaters Mersey Paper Company Limited.	NS
BPC.	Bowater Power Company Limited.	Nfld
BPPC.	Bathurst Power and Paper Company Limited.	NB
BRMC.	Brunner Mond Canada Limited.	Ont
C.	Chemsell (1963) Limited.	Alta
CAC.	Cassiar Asbestos Corporation Limited.	BC
CC.	City of Campbellton.	NB
CCC.	Columbia Cellulose Company Limited.	BC
CCCC.	Continental Can Company of Canada Limited.	Ont
CCL.	Canadian Celanese Limited.	Qué
CDSC.	Canada and Dominion Sugar Company Limited.	Ont, Qué
CE.	City of Edmonton.	Alta
CFP.	Canadian Forest Products Limited.	BC
CGEC.	Canadian General Electric Company Limited.	Ont
CGQM.	Cariboo Gold Quartz Mining Company Limited.	BC
CIPC.	Canadian International Paper Company.	Qué
CL.	City of Lethbridge.	Alta
QMH.	City of Medicine Hat.	Alta
CMSC.	Cominco Limited.	Sask, BC, NWT
CN.	City of Nelson.	BC
CNPC.	Canadian Niagara Power Company Limited.	Ont
COC.	City of Calgary.	Alta
COR.	City of Revelstoke.	BC
CP.	Calgary Power Ltd.	Alta
CPUC.	Campbellford Public Utilities Commission.	Ont
CRL.	City of Rivière-du-Loup.	Qué
CRPC.	Churchill River Power Company.	Sask
CS.	City of Sherbrooke.	Qué
CSF.	Canadian Sugar Factories Limited.	Alta
CTMC.	Canada Tungsten Mining Corporation Limited.	NWT
CU.	Canadian Utilities Limited.	Alta
CZB.	Crown Zellerbach Building Materials Limited.	BC
CZC.	Crown Zellerbach Canada Limited.	BC
DOSCO.	Dominion Iron and Steel Company Limited.	NS
DOT.	Department of Transport, Government of Canada.	Nfld
DP.	Donnacona Paper Company.	Qué
DPC.	Dryden Paper Company Limited.	Ont
DPP.	Domtar Pulp and Paper Company Limited.	Qué
DPW.	Department of Public Works, Government of Alberta.	Alta
DT.	Dominion Tar and Chemical Company.	Qué
DTC.	Dominion Textile Company Limited.	Qué

CODE	OWNER	DEVELOPMENTS LOCATED IN
BEC	E. B. Eddy Company	Ont, Qué
FC.	Elk Falls Company Limited.	BC
KPC	East Kootenay Power Company Limited.	Alta, BC
LS.	Eagle Lake Sawmills Company Limited.	BC
M	Endako Mines Limited	BC
ML.	Electrique de Mont Laurier Limitée	Qué
MR.	Eldorado Mining and Refining Limited	NWT, Sask
RC.	Electric Reduction Company	Qué
C	Fraser Companies Limited	NB
MCC	Ford Motor Company of Canada Limited	Ont
CM.	Gaspé Copper Mines Limited	Qué
SCOS	Great Canadian Oil Sands Limited	Alta
ELW	Gananoque Electric Light and Water Supply Co. Ltd.	Ont
LPAC.	Great Lakes Paper Company.	Ont
LPC	Great Lakes Power Corporation Limited.	Ont
M	Granduc Mines Limited.	BC
PC.	Gulf Power Company	Qué
PP.	Gaspesia Pulp and Paper Company Limited.	Qué
TR.	Goodyear Tire and Rubber Company Limited	Ont
HBMS	Hudson Bay Mining and Smelting Company Limited	Sask
HCL.	Huronian Company Limited	Ont
HECO.	Hydro-Electric Commission of Ontario	Ont
LJP.	Hart Jaune Power Company	Qué
HLC.	Hillcrest Lumber Company Limited	BC
WS.	Hiram Walker and Sons Limited.	Ont
NCO	International Nickel Company of Canada Limited	Man
OCC	Iron Ore Company of Canada	Qué, Nfld
OCL	Imperial Oil Company Limited	NS
PP.	Irving Pulp and Paper Limited.	NB
IOOC	Jedway Iron Ore Company Limited.	BC
MC.	James MacLaren Company Limited	Qué
C	Kalium Chemicals Limited	Sask
VPC	Kalamazoo Vegetable Parchment Company Limited.	Ont
MC.	Lorraine Mining Company Limited.	Qué
MBPP	Minas Basin Pulp and Power Company	NS
MBPR	MacMillan Bloedel and Powell River Limited	BC
ACC.	Marathon Corporation of Canada	Ont
MCL.	Mohawk Corporation Limited	Qué
ME	Municipality of Edmundston	NB
MEC.	Maritime Electric Company Limited.	PEI
FLC	McFadden Lumber Co. (Domtar)	Ont
MH	Manitoba Hydro	Man
MJ	Municipality of Jonquière.	Qué
MNP	Main and New Brunswick Electrical Power Co. Ltd.	NB
MP	Manicouagan Power Company.	Qué
QPC	MacLaren-Québec Power Company.	Qué

CODE	OWNER	DEVELOPMENTS LOCATED IN
MS	Municipality of Summerside	PEI
MSC.	Manitoba Sugar Company Limited	Man
NBEPC.	New Brunswick Electric Power Commission.	NB
NBIPC.	New Brunswick International Paper Company Limited.	NB
NCPC	Northern Canada Power Commission	YT, NWT
NHB.	National Harbours Board, Government of Canada.	Man
NLPC	Newfoundland Light and Power Co. Limited	Nfld
NM	Noranda Mines Limited.	Qué
NPC.	Newfoundland and Labrador Power Commission	Nfld
NRC.	National Research Council, Government of Canada.	Ont
NSLPC.	Nova Scotia Light and Power Company Limited.	NS
NSP.	Nova Scotia Pulp Limited	NS
NSPC	Nova Scotia Power Commission	NS
NU	Northland Utilities Limited.	Alta
NWPP	North Western Pulp and Power Limited	Alta
OFM.	Ogilvie Flour Mills.	Qué
OHEC	Ottawa Hydro-Electric Commission	Ont
OMPP	Ontario-Minnesota Pulp and Paper Company Limited	Ont
OPC.	Ontario Paper Company.	Ont
OVPC	Ottawa Valley Power Company.	Qué
OWLP	Orillia Water Light and Power Commission	Ont
PAPC	Pan American Petroleum Corporation	Alta
PAPUC.	Port Arthur Public Utilities Commission.	Ont
PBC.	Price Company Limited.	Qué
PC	Polymer Corporation.	Ont
PELC	Pembroke Electric Light Company Limited.	Qué, Ont
PHPC	Peterborough Hydraulic Power Company	Ont
PP	Pacific Petroleum Company Limited.	BC
PPP.	Price (Nfld) Pulp and Paper Limited.	Nfld
QCMC	Québec Cartier Mining Company.	Qué
QHEC	Québec Hydro-Electric Commission	Qué
QNSPC.	Québec-North Shore Paper Company	Qué
RC	Rayonier Canada (BC) Limited	BC
REC.	Romaine Electric Company Limited	Qué
SAPC	Saguenay Power Company	Qué
SCC.	Steel Company of Canada Limited.	Ont
SFPPC.	Spruce Falls Power and Paper Company	Ont
SGM.	Sheritt-Gordon Mines Limited.	Man, Alta
SMPC	Smelter Power Corporation.	Qué
SMS.	S. M. Simpson Limited.	BC
SP	Strathcona Paper Company Limited	Ont
SPC.	Saskatchewan Power Corporation	Sask
SPCL	Seaboard Power Corporation Limited	NS
STLSA.	St. Lawrence Seaway Authority.	Ont
TCPC	Tilt Cove Power Corporation.	Nfld
TFPC	Twin Falls Power Company Limited	Nfld
TPPC	Thurso Pulp and Paper Company.	Qué

CODE	OWNER	DEVELOPMENTS LOCATED IN
WC	Western Chemicals Limited.	Alta
WCPC	West Coast Power Company Limited	Nfld
WFI	Western Forest Industries Limited.	BC
WH	Winnipeg Hydro	Man
WKPL	West Kootenay Power and Light Company Limited.	BC
WML	Wabush Mines Limited	Nfld
YCGC	Yukon Consolidated Gold Corporation.	YT



LEGEND

TRANSMISSION LINES		UNDER CONSTRUCTION
EXISTING	66 KV - 199 KV	---
	200 KV - 299 KV	- - -
	300 KV - 399 KV	- - -
	400 KV AND OVER	- - -

GENERATING STATIONS

●	HYDRO-ELECTRIC	○
▲	THERMAL-ELECTRIC	△

NOTE: ONLY STATIONS WITH TOTAL INSTALLED GENERATING CAPACITIES OF NOT LESS THAN 1 500 KW ARE SHOWN

DEPARTMENT OF ENERGY, MINES AND RESOURCES
WATER RESOURCES BRANCH

CANADA

MAIN ELECTRIC TRANSMISSION SYSTEMS
AND
PRINCIPAL POWER GENERATING STATIONS

SCALE OF MILES

STATUTE MILES 0 100 200 300 400
KILOMETRES 0 160 320 480 640

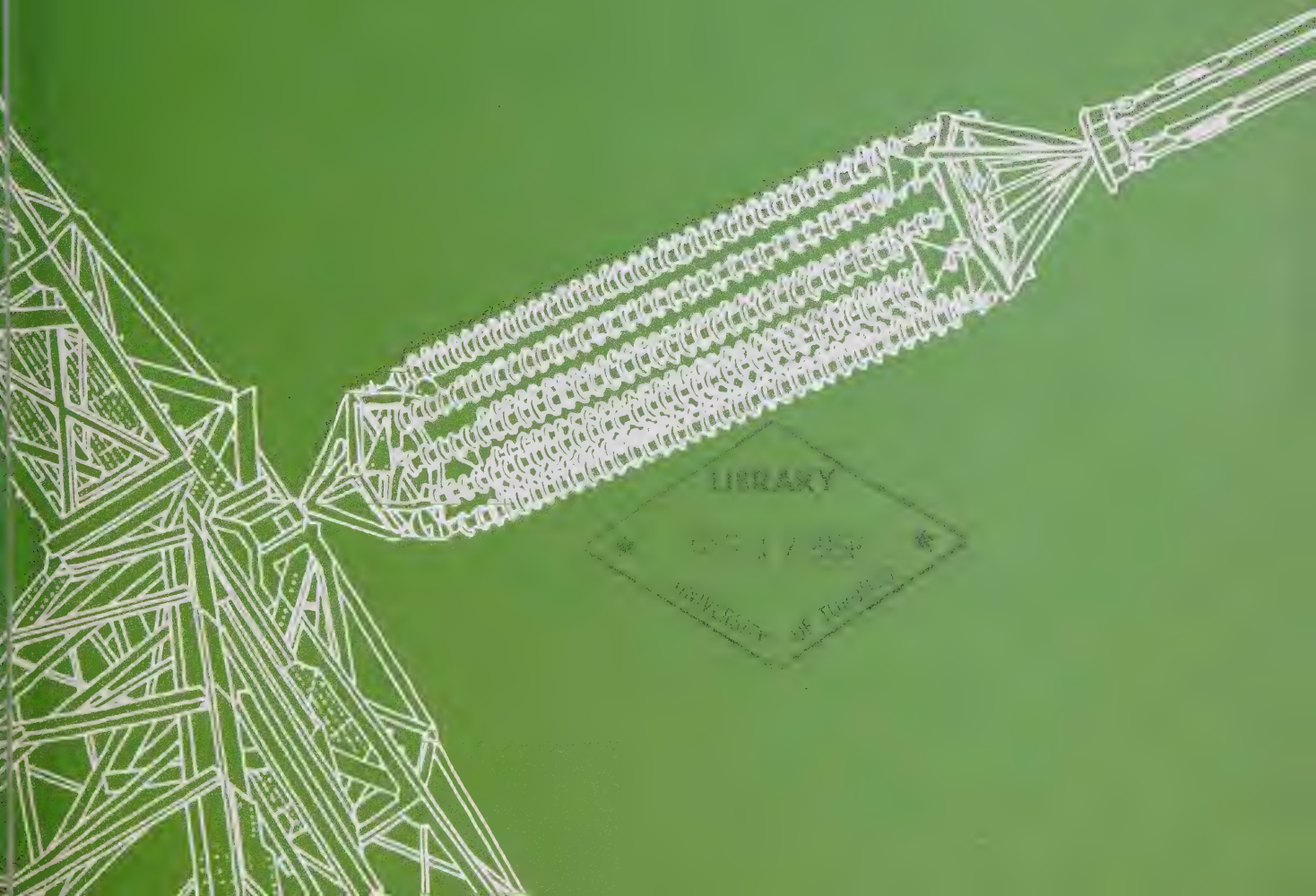
DECEMBER 1966

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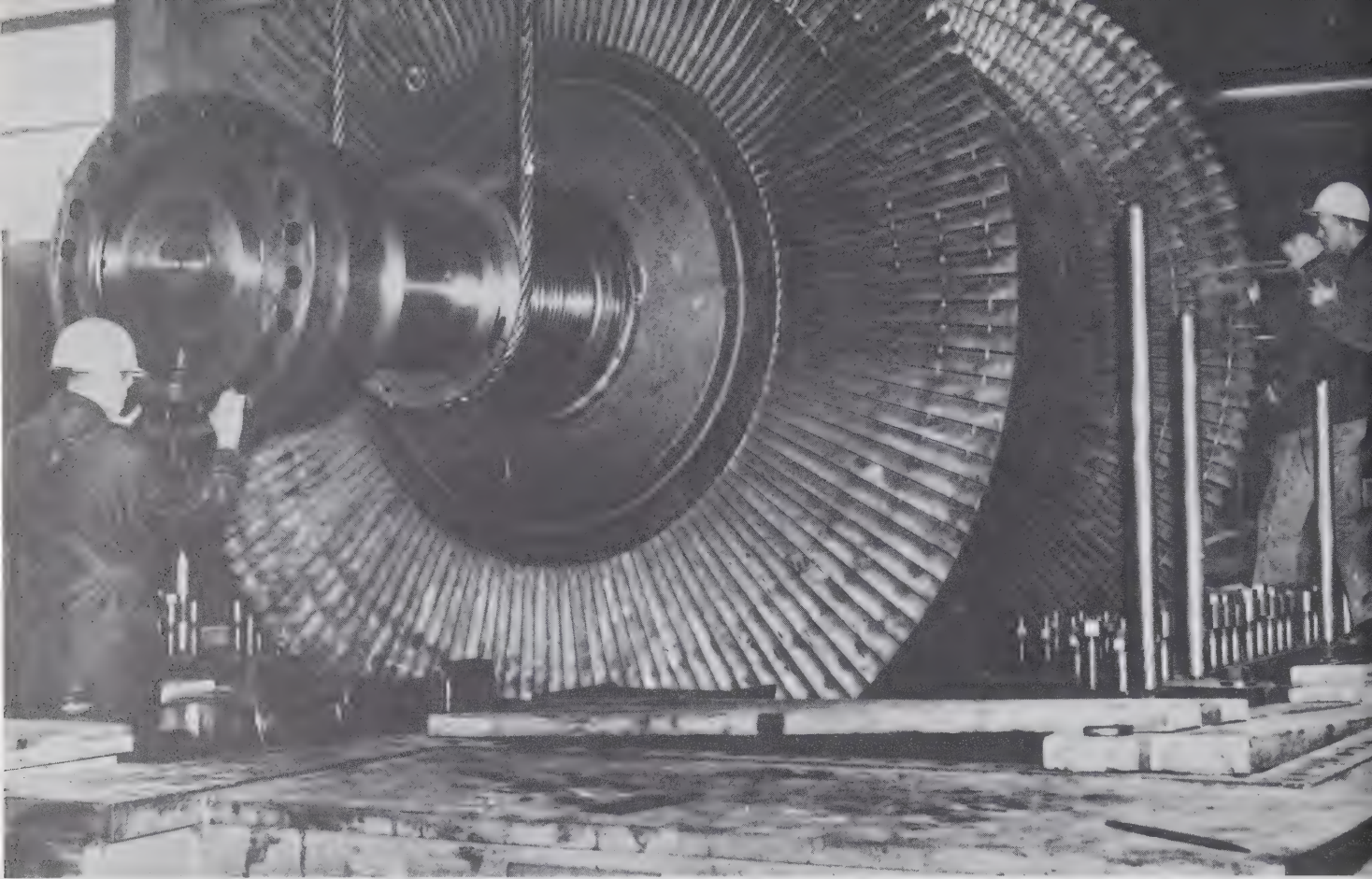
electric power in canada

1997



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ELECTRIC POWER IN CANADA - 1967



*Turbine rotor at Lakeview Generating Station
near Toronto.*



ELECTRIC POWER IN CANADA • 1967

DEPARTMENT OF ENERGY, MINES AND RESOURCES
INLAND WATERS BRANCH

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PREFACE

"Electric Power in Canada" presents a general outline of the history of power development in Canada and discusses briefly the availability and distribution of water power and fuel resources. Also presented is a report in detail on progress during 1967 in the development and planning of new power generating facilities and a list of hydro and thermal generating stations with minimum installed generating capacities not less than 1,500 kw.

The Branch acknowledges with thanks the co-operation of the power-producing agencies in every province in Canada in making available the information used in the preparation of this publication. The Branch is indebted also to the Dominion Bureau of Statistics with whom close liaison has been maintained in the collection of information on existing power development.

The map inside the back cover shows main transmission systems and electric power generating stations in Canada.

A series of maps showing similar information in greater detail is available for the following regions:

1. British Columbia, Yukon Territory and Northwest Territories
2. Alberta, Saskatchewan and Manitoba
3. Ontario
4. Québec
5. New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland

These maps are available from:

Director
Inland Waters Branch
Department of Energy, Mines &
Resources
Ottawa 4, Ont.

Photographs were provided through the courtesy of the following organizations:

Atomic Energy of Canada
British Columbia Hydro & Power Authority
Calgary Power Ltd.
Consolidated Mining and Smelting Company of Canada Limited
Hydro-Electric Power Commission of Ontario
Manitoba Hydro
National Film Board
New Brunswick Electric Power Commission
Newfoundland and Labrador Power Commission
Nova Scotia Light & Power Company Limited
Nova Scotia Power Commission
Price (Nfld) Pulp and Paper Limited
Québec Hydro-Electric Commission
Saskatchewan Power Corporation

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Tabular Summary of Progress in Development - 1967

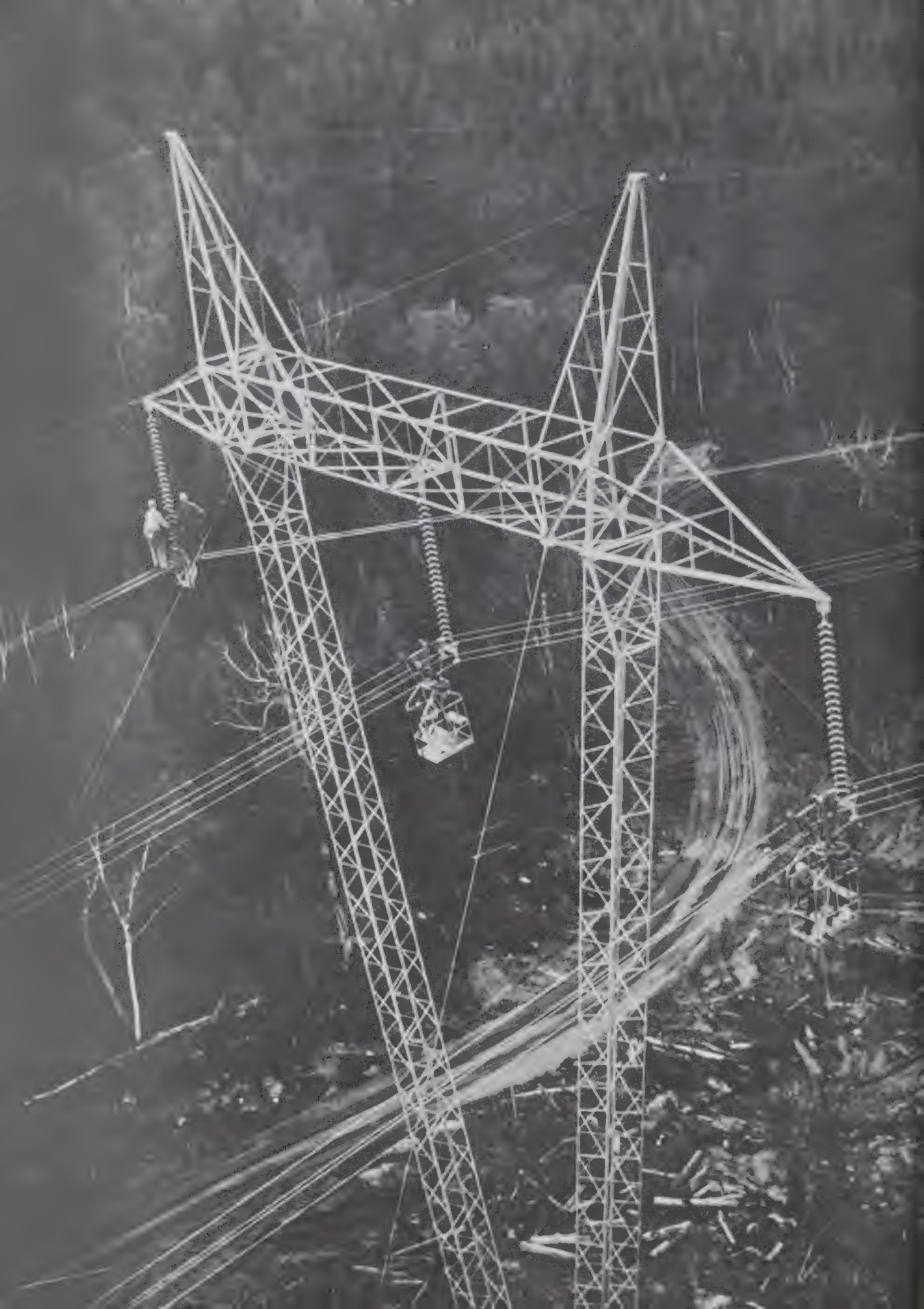
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ELECTRIC POWER GENERATING STATIONS

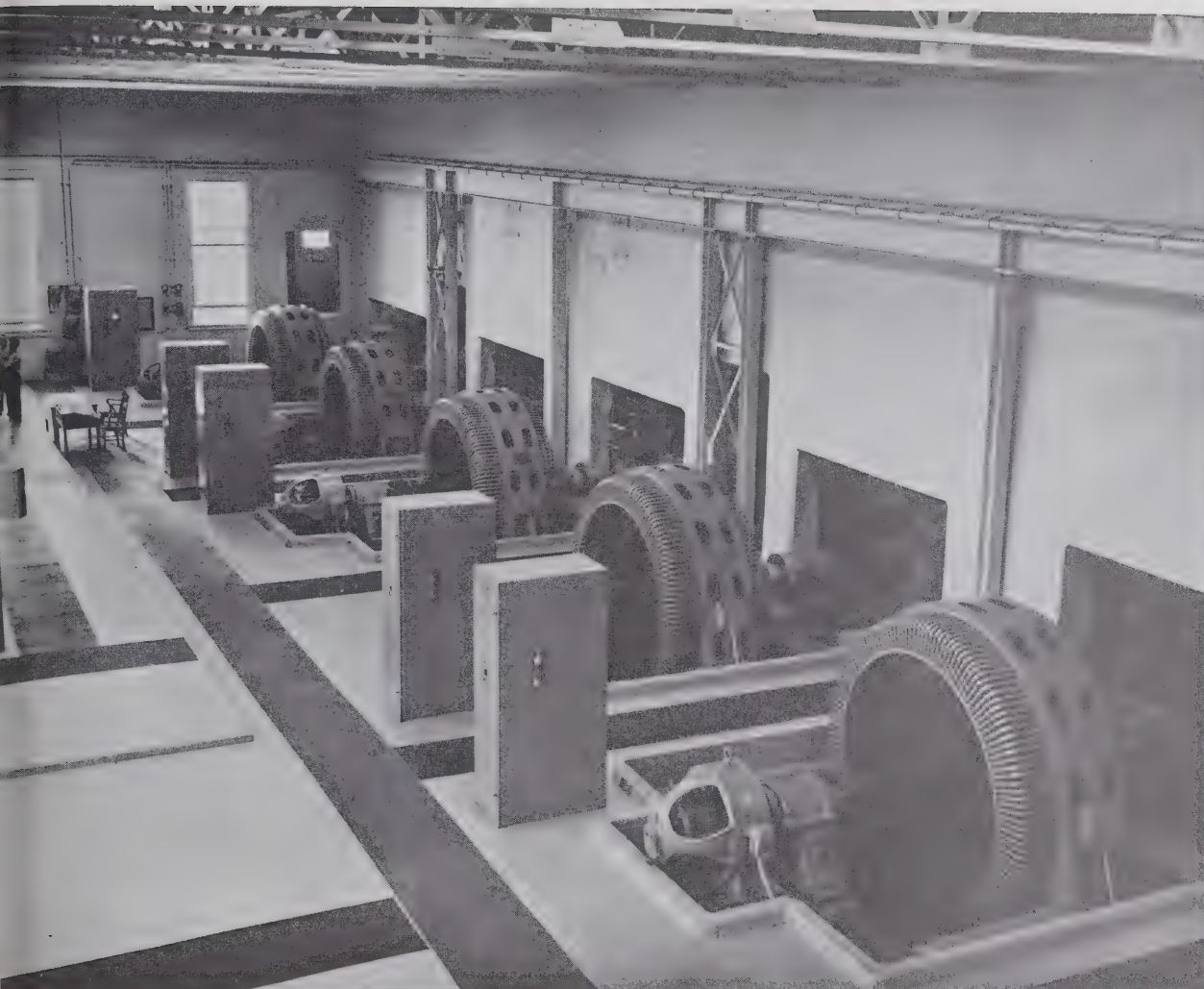
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MAP OF CANADA (showing main electric transmission systems and principal power generating stations) . . . inside back cover

The 500,000-volt, extra high voltage transmission line between Ontario's James Bay region and Toronto which was energized at full capacity in 1967.



DEVELOPMENT OF ELECTRIC POWER IN CANADA



Generators at Bishops Falls in Newfoundland.

History of Power Development

The history of electric power development in Canada has been one of remarkable and sustained growth since the beginning of the century. The graph on page 5 illustrates the expansion in installed generating capacity in hydro and thermal stations that has taken place in the last fifty years. Table 1 shows hydro and thermal generating capacity by province or territory at December 31, 1967.

The graph shows that, although thermal power has made a significant contribution towards satisfying the nation's power needs, hydro power has carried by far the larger part of the burden. This is to be expected when one considers that

Canada, in terms of water power resources, is one of the most richly endowed nations in the world.

From a modest total of 133,000 kw. of generating capacity installed at the end of 1900, Canada's total installed hydro capacity rose to the substantial total of 23.4 million kilowatts by the end of 1967. In the same period, thermal capacity grew to 9.6 million kilowatts.

The rate of installation of thermal capacity in the early 1900's was extremely low and until the late 1940's the part played by

TABLE 1 - INSTALLED ELECTRIC GENERATING CAPACITY IN CANADA

31 December 1967

Province or Territory	Installed Generating Capacity - kw		
	Hydro	Thermal	Total
British Columbia	2,797,000	1,269,000	4,066,000
Alberta	616,000	1,433,000	2,049,000
Saskatchewan	397,000	682,000	1,079,000
Manitoba	1,074,000	366,000	1,440,000
Ontario	6,339,000	3,952,000	10,291,000
Quebec	11,009,000	612,000	11,621,000
New Brunswick	262,000	532,000	794,000
Nova Scotia	152,000	544,000	696,000
Prince Edward Island	-	57,000	57,000
Newfoundland	696,000	107,000	803,000
Yukon Territory	28,000	5,000	33,000
Northwest Territories	35,000	29,000	64,000
CANADA	23,405,000	9,588,000	32,993,000

thermal generating equipment in Canada's power economy was of relatively minor importance. On the other hand, improvements in electric power transmission techniques introduced at the turn of the century and an increasing emphasis on larger hydro plants led to a generally accelerated rate of development of hydro facilities.

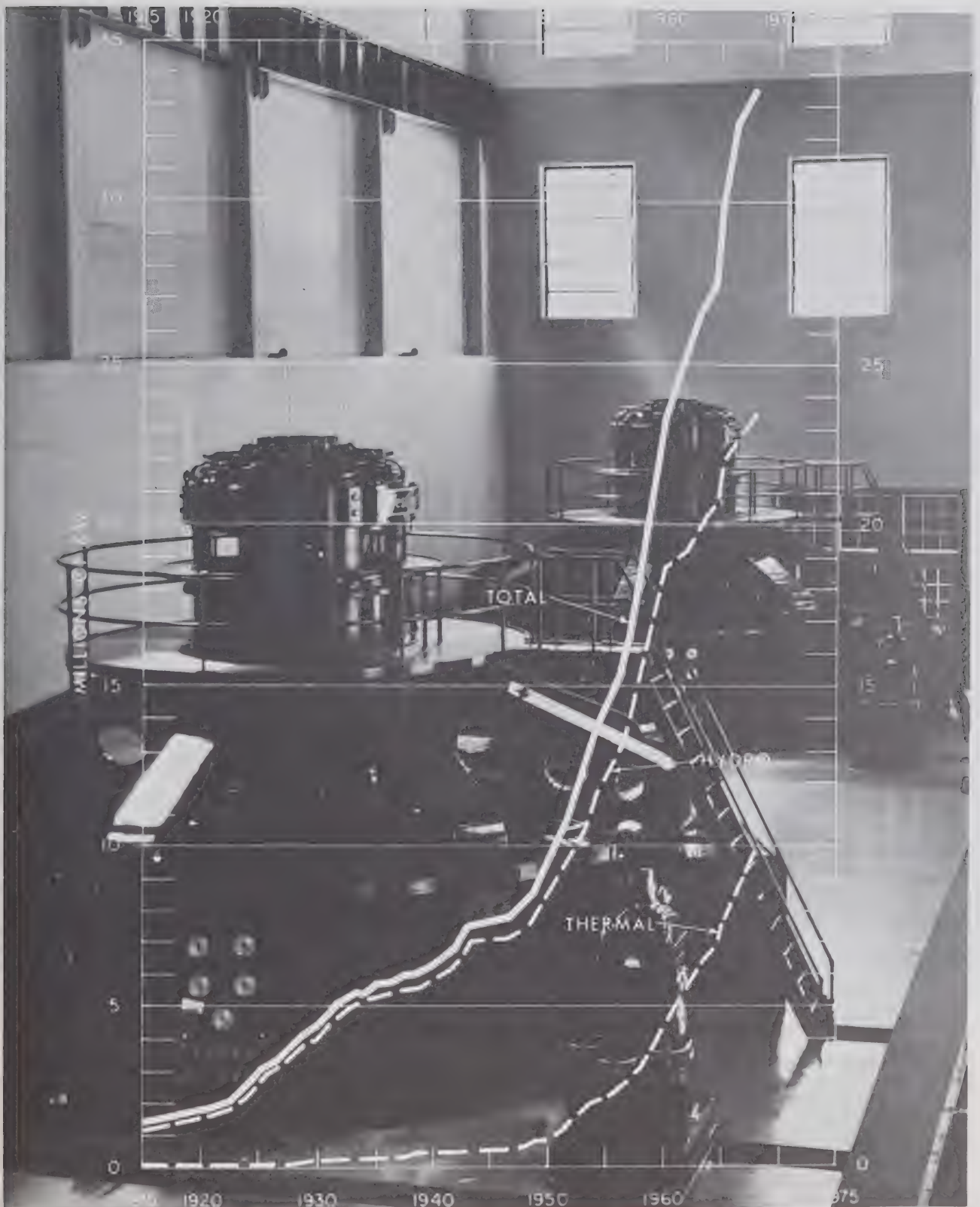
The noticeable jump in the hydro installation rate in the 1920's is a result of the heavy demand for electric power during this prosperous period. The drop in power demand during the depression years of the early 1930's did not become apparent in the installation rate until about 1935, due to the time lag which is inherent in hydro-electric power development. Hydro projects initiated prior to the depression years were completed, accounting for the continuation of a high rate of capacity installation up until 1935. Thereafter, poor economic conditions reduced the installation rate during the period 1935 - 1939.

The tremendous demand for power to drive Canada's war industries was responsible for the sharp rise in installation of new generating facilities between 1940 and 1943. However,

construction of new facilities decreased in the later war years, causing a second flattening in the growth curve from 1944 to 1947.

Post-war industrial expansion and rapidly-growing residential and agricultural developments imposed extremely heavy demands on power generating facilities. To stay abreast of these demands required the installation of new generating capacity at a rate higher than at any time in Canada's history. The sharp increase in installed generating capacity that followed could not be satisfied from hydro sources alone and this period marks the beginning of an extensive program of thermal plant construction.

In the period 1950 - 1967, the average annual rate of installation of both hydro and thermal facilities has been some 1.4 million kilowatts, with hydro contributing two kilowatts of new capacity for each kilowatt contributed by thermal. It is of interest to note, however, that the average increase in thermal generating capacity over the five years 1963 - 1967 has equalled the average increase in hydro capacity and promises to surpass it in the not too distant future.



Growth of electric power generating capacity in Canada.

Current Trends in Power Development

Water power traditionally has been the main source of electric energy in Canada and this is still true today. Thermal sources, however, are playing an increasingly important role in power supply and undoubtedly will some day supersede water power as the main supplier of electric energy. The choice between the development of a hydro-electric power site and the construction of a thermal generating station must take into account a number of complex considerations, the most important of which are economic in nature.

In the case of hydro-electric projects, finance charges are high because of the large capital outlays involved but these are more than offset by low maintenance and operating costs. The long life of a hydro plant and its dependability and flexibility of operation in meeting varying loads are added advantages. Also important is the fact that the water which drives the hydro turbine is a renewable resource.

Probably the most important advantage of the thermal station, on the other hand, is that it can be located close to the demand area, with a consequent saving in transmission costs. However, with the current trend to large steam stations, some of the flexibility of location of thermal stations is lost because they require considerable quantities of water for cooling purposes, making it essential that they be sited near an adequate water supply.

The trend to thermal development which became apparent in the 1950's can be explained in part by the fact that in many parts of Canada, most of the hydro-electric sites within economic transmission distance of load centres had been developed and planners had to turn to other sources of electric energy. More recently, however, advances in extra-high-voltage transmission techniques are providing a renewed impetus to the development of hydro power sites previously considered too remote.

Large thermal units require a relatively long starting-up time and consequently lack flexibility of operation. They are most efficient for meeting conditions of continuous load. Hydro stations, on the other hand, can place generating units on line with a minimum of delay and hence are admirably suited to supply

power to meet the peak loads which may occur several times each day. By combining the advantages of both hydro and thermal stations in integrated supply systems, power producers are now achieving much greater flexibility of operation.

The trend toward larger, more economical thermal units to meet power demands results in the need for more reserve capacity to maintain the uninterrupted service customers have come to expect and rely on. However, as the total capacity of an operating system increases through either load growth or interconnection with other systems, the size of any one unit in relation to the total system capacity becomes less and the proportion of capacity required for reserve is reduced.

Another trend in development designed to meet the problem of varying daily loads is the use of pumped storage. An example is the Sir Adam Beck hydro development at Niagara Falls. Water taken from the Niagara River above the Falls is carried by means of a tunnel and a power canal to the penstocks which supply the main generating station on the bank of the Niagara River some distance below the Falls. In off-peak hours, surplus power from the main station is used to pump water from the power canal into a reservoir maintained at a higher level. During peak-load hours, the pumping-generating units operate as generators and are driven by water released from the reservoir. The pumping-generating units at the Sir Adam Beck development make available an extra 176,700 kw. of generating capacity. A pumping-generating station using the same general principle has recently been completed on the Brazeau River in Alberta as part of the 305,500-kw. Big Bend hydro development.

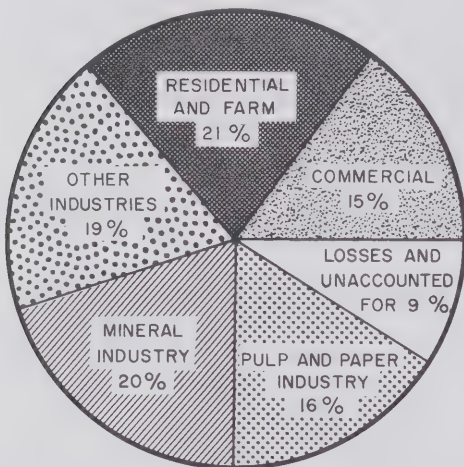
Perhaps the most promising application of the pumping-generating principle is its use in conjunction with nuclear power stations. Nuclear units, in common with large conventional thermal units, can be used most efficiently under conditions of continuous operation. Off-peak nuclear power can be used to operate pumping-generating units and the hydro-electric power derived from operating the units as generators is available for use during periods of peak demand.



Sir Adam Beck-Niagara hydro stations near Queenston on the Niagara River, Ontario. Generating Station No. 2 is shown at left, No. 1 at lower right and the pumping station at upper right.

Utilization of Electric Power

In 1967, Canada's generating facilities produced a total of 164,617 million kilowatt-hours of electric energy, after allowing for the energy used in the power stations themselves. Of this total, 131,933 million kilowatt-hours was produced in hydro-electric stations and 32,684 million kilowatt-hours in thermal stations. Energy imported from the United States exceeded by 76 million kilowatt-hours the energy exported to the United States during the year, bringing to 164,693 million kilowatt hours the total energy made available in Canada.



Principal uses of electric energy in Canada.

Industry uses approximately 55 per cent of the total electric energy made available in Canada; residential and farm use account for 21 per cent and commercial use, 15 per cent. The remaining 9 per cent is listed under "losses and unaccounted for". Because many power producers do not distinguish in their records between residential and farm customers, the amount of energy used is shown as a combined total. Energy used for street lighting, represents slightly less than one per cent of the total energy made available and is included in the "commercial" category.

INDUSTRIES

About 20 per cent of the total energy made available in Canada is used in the mineral industry, including smelting and refining, 16 per cent by the pulp and paper industry and 19 per cent by other industries. The chemical industry and the primary iron and steel industry together consume almost one-half of the total amount used by the "other industries".

Approximately 75 per cent of the energy consumed by the mineral industry in Canada is used in the smelting and refining of metals.

Canada has no known deposits of bauxite but the availability of low-cost hydro-electric power has fostered the establishment of an aluminum industry which produces one-eighth of the world's supply of this metal. Further evidence of the value of water power to mining operations is provided by the fact that Canada's asbestos industry, which produces approximately 40 per cent of the total world supply of asbestos obtains the major part of its power supply from hydro-electric sources.

The incidence of large water power resources in those regions in which the more important mineral deposits have been found has greatly facilitated mining development. Recent examples are the nickel mining and refining complex at Thompson, Manitoba, which uses hydro-electric power generated in the Kelsey plant on the Nelson River, and the iron ore mining operations in Labrador supplied by the Twin Falls plant on the Unknown River.

Metal mining, a very important division of the Canadian mining industry, is carried on mainly in two physiographic regions, the Western Cordillera and the Canadian Shield. In the Western Cordillera, the mountainous topography and the relatively high amounts of precipitation favour the development of water power. In the Canadian Shield, which is a Precambrian formation stretching in a wide sweep around Hudson Bay from the Mackenzie River basin to the eastern tip of Labrador, heavy glaciation in recent geological times has formed river systems which are comparatively young and are characterized by large numbers of lakes connected by short river sections with numerous rapids and falls suitable for development as hydro-electric power sites.

The pulp and paper industry in Canada is one of the world's great industrial enterprises. Total mill capacity for the production of newsprint paper in Canada is considerably greater than that of any other country in the world and in total production of wood pulp, Canada is second only to the United States.

The fact that over 90 per cent of the manufactured newsprint is exported gives some indication of the importance of the industry to Canada's export trade program.

By far the larger portion of the energy used in the pulp and paper industry is derived from water power.



Power and Population

The figures in Table 2 illustrate for each Province and Territory, and for Canada as

hours of electric energy was generated by the electric industry during 1967, about 57 per cent

TABLE 2 - POWER AND POPULATION

31 December 1967

Province or Territory	Estimated Population	Net total Electric Energy Generated 1,000's kwh	Per Capita Electric Energy Generated kwh
British Columbia	1,947,000	21,197,000	10,890
Alberta	1,490,000	6,798,000	4,560
Saskatchewan	958,000	4,352,000	4,540
Manitoba	963,000	6,535,000	6,790
Ontario	7,149,000	51,961,000	7,270
Quebec	5,868,000	63,593,000	10,840
New Brunswick	620,000	3,640,000	5,870
Nova Scotia	757,000	2,905,000	3,840
Prince Edward Island	109,000	181,000	1,660
Newfoundland	500,000	3,147,000	6,290
Yukon and N.W.T.	44,000	308,000	7,000
CANADA	20,405,000	164,617,000	8,070

whole, the estimated population, the net total electric energy generated and the per capita electric energy generated.

A net total of 164,617,000,000 kilowatt-

of the amount which in theory could be generated if the 32,993,000 kw. of generating capacity installed at the end of 1967 was operating continuously.

Water Power Resources of Canada

Table 3 presents a summary of developed water power in Canada and an estimate of undeveloped water power potential, based on records maintained by the Inland Waters Branch.

Estimates of available power are shown for undeveloped sites only; for developed sites, the total generating capacity actually installed is indicated. It should be emphasized that the capacity installed at an existing hydro-electric development frequently is in excess of the continuous power available at the site. The relationship between installation and available power is explained more fully later in this section.

Undeveloped Water Power

Column 2 of Table 3 lists the estimated continuous power ordinarily available during

periods of low discharge under existing conditions of river flow. These estimates are based upon Q95, which is the natural or modified flow available 95 per cent of the time.

Column 3 lists the estimated dependable maximum power based upon Q50, the natural or modified flow available for a least 50 per cent of the time.

Column 4 lists the estimated dependable maximum power based on Q_m , the arithmetical mean flow.

On rivers for which flow records are sparse or non-existent, estimates of flow are made from available information relating to runoff in the same general area.

As a rule, the figures of undeveloped water power at the various rates of flow reflect only the potential of undeveloped sites which at present are considered feasible for development.

TABLE 3 - WATER POWER RESOURCES OF CANADA

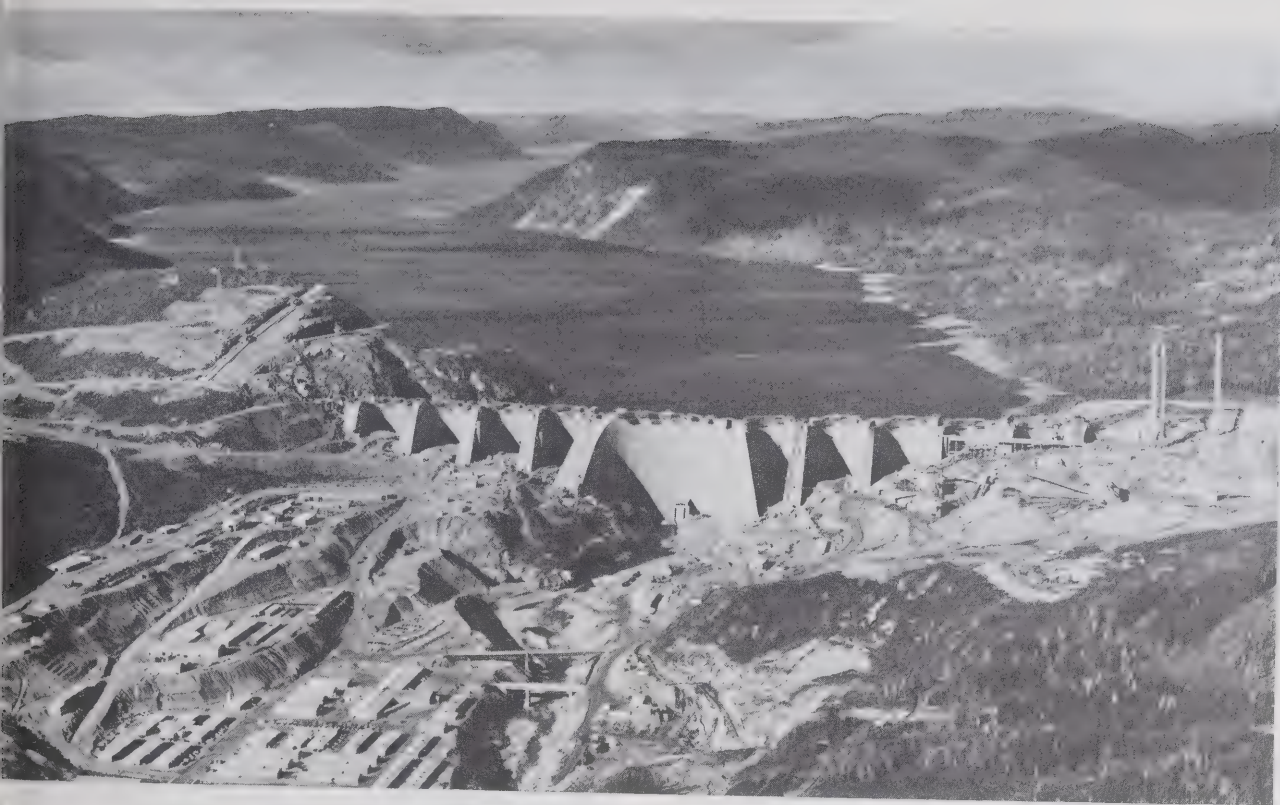
31 December 1967

Province or Territory	Undeveloped Water Power			Developed Water Power
	Available Continuous Power at 88% Efficiency			Installed Generating Capacity kw
	at Q95(a) kw	at Q50(b) kw	at Q_m (c) kw	
British Columbia	4,946,000	16,635,000	24,665,000	2,797,000
Alberta	895,000	3,244,000	4,866,000	616,000
Saskatchewan	773,000	1,298,000	1,559,000	397,000
Manitoba	2,964,000	5,501,000	5,853,000	1,074,000
Ontario	462,000	1,088,000	1,635,000	6,339,000
Québec	8,027,000	27,780,000	36,314,000	11,009,000
New Brunswick	62,000	221,000	497,000	262,000
Nova Scotia	21,000	112,000	165,000	152,000
Prince Edward Island	-	1,000	2,000	-
Newfoundland	1,195,000	3,450,000	4,641,000	696,000
Yukon Territory	664,000	3,237,000	5,689,000	28,000
Northwest Territories	864,000	2,232,000	3,322,000	35,000
CANADA	20,873,000	64,799,000	89,208,000	23,405,000

(a) - Power equivalent of flow available 95 per cent of the time.

(b) - Power equivalent of flow available 50 per cent of the time.

(c) - Power equivalent of arithmetical mean flow.



Manicouagan 5 Dam, scheduled for completion in 1968. Generating facilities (1,322,400 kw. total) will go into service over the period 1970-72.

In the case of Québec, however, the figures of undeveloped water power reflect the gross potential, that is, the power which would be derived from development of the total head in the river, rather than the combined head at a number of specific sites. The figures for Québec are based only on rivers whose drainage areas exceed 3,000 square miles. The power potential of smaller rivers is neglected on the grounds that sites on these rivers will probably never be developed.

It should be emphasized that the figures of undeveloped water power in Column 2 represent only the minimum water power possibilities in Canada. The reason for this is that the estimates are based upon existing river flows, which for the most part do not reflect the benefits of streamflow regulation that would result from the development of storage potential. The figures of undeveloped water power in Column 3 correspond to the flow available 50 per cent of the time, with the result that partial regulation is required in some instances. The figures in Column 4, however, are determined from the arithmetical mean flow and represent the power obtainable if the entire

flow in the river could be regulated to provide a continuous flow of constant magnitude. Since this last condition assumes complete regulation, estimates of potential based upon arithmetical mean flow will exceed the amount of installed capacity that might be expected to be installed at the site, particularly where little or no storage is available. Experience in the development of water power sites, however, has indicated that in fact, the generating capacities installed at many recently developed sites greatly exceed what might be dictated by even the arithmetical mean flow.

Estimates of the magnitude of undeveloped water power resources are continually revised on the basis of the latest information available.

Several major river diversion possibilities exist, particularly in British Columbia, where topographical conditions make possible such rearrangements of flow. The estimates of potential of British Columbia's undeveloped hydro resources include figures based upon the diversion of rivers which, if they are developed at all, will almost certainly be developed on a combined-river basis.



Churchill Falls on the Churchill River in Labrador.

Developed Water Power

The figures of installed generating capacity shown in Column 5 of Table 3 are based upon the manufacturer's rating in kilowatts as shown on the generator name-plate, or derived from the rating where it is indicated in kilovolt-amperes.

The maximum economic installation at a power site can be determined only by careful consideration of all the conditions and circumstances pertinent to its individual development and its role in the system. It is the usual practice, to install units which have a combined capacity in excess of the available continuous power at Q50, and frequently in excess of the power available at Qm. There are a number of reasons for this. The excess capacity may be installed for use at peak-load periods, to take advantage of periods of high flow, or to facilitate plant or system maintenance. In some instances, storage dams have been built subsequent to initial development to smooth out fluctuations in river flows. In other cases, deficiencies in power output during periods of low flow have been offset by auxiliary power supplied from thermal plants, or by interconnection with other plants which operate under different load conditions or are located on rivers with different flow characteristics.

The extent to which the installed capacity exceeds the available continuous power at the various rates of flow is dependent upon the factors which govern the system of plant operation, and varies widely in different areas of the country. In some developments, the

difference may amount to several hundred per cent. For this reason, discretion should be used in comparing the figures in Column 5 with those in Columns 2, 3 or 4, as available continuous power and installed capacity are not directly comparable. As a rough guide, however, it may be assumed that the power equivalent of the flow at Q50 represents an approximate, although conservative, estimate of hydro generating capacity remaining to be installed in Canada.

Water Power Distribution in Canada

Table 3 indicates the distribution of undeveloped water power resources and installed generating capacity in Canada. A review of the table shows that substantial amounts of water power have been developed in all provinces except Prince Edward Island, where water power resources are meagre. As the development of Canada's natural resources proceeds, the fortunate incidence of water power in proximity to mineral deposits, pulpwood and other natural resources becomes increasingly apparent. There is little doubt that the existence of large amounts of potential hydro power on northern rivers will prove to be a factor of prime importance in the eventual realization of the natural wealth of Canada's north.

BRITISH COLUMBIA, traversed by three distinct mountain ranges and with, generally speaking, a high rate of precipitation, has many mountain streams which offer abundant opportunity for the development of hydro-electric power. In terms of recorded available water power resources, developed and undeveloped, the

province ranks second in Canada. In the amount of generating capacity installed, it is exceeded only by Québec and Ontario.

Notable for the magnitude of their power potential are such rivers as the Columbia, Fraser, Peace and Stikine. Up to the present, however, hydro-electric developments on smaller rivers in the southern part of the province have been called upon to satisfy the major load requirements of British Columbia. The immense power resources of the Peace River are now being harnessed and by 1968 will supply energy to the southern part of the province. Development of the Columbia River, now well under way, is designed to provide initially three huge storage reservoirs and eventually to make available a significant amount of "at site" power in the Canadian portion of the basin.

The foremost producer and distributor of electric power in British Columbia is the provincially-owned British Columbia Hydro and Power Authority.

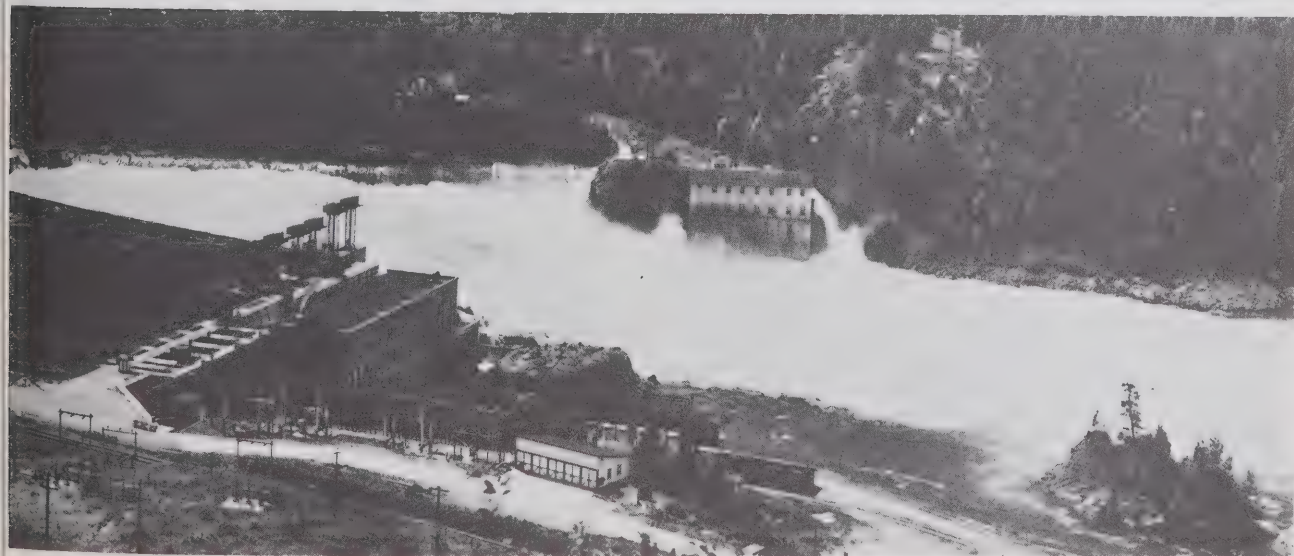
In ALBERTA, most of the principal hydro-electric developments are located on the Bow River and its tributaries, and from these developments, Calgary Power Ltd. serves most of the southern part of the province. The Big Bend development, completed in 1967 on the Brazeau River in the headwaters of the North Saskatchewan River, is now supplying power to augment the energy from the Bow River plants. Substantial water power resources are located in northern regions of the province, and although these are somewhat remote from present centres of population, the advent of extra-high-voltage transmission has enhanced the prospect of their development.

In SASKATCHEWAN, large water power resources exist in the central and northern parts of the province, principally on the Churchill, Fond du Lac, and Saskatchewan Rivers. Prior to 1963, power to serve the more settled parts of the province came from the thermal-electric plants fuelled by coal, oil or natural gas, while hydro-electric power generated in the province was used almost exclusively for mining purposes in northern areas. In 1963, Saskatchewan River power from Squaw Rapids, the first hydro development on the Saskatchewan River, began supplying the transmission network of the provincially-owned Saskatchewan Power Corporation.

Of the three Prairie Provinces, MANITOBA, with immense hydro-electric capabilities on the Winnipeg, Churchill, Nelson and Saskatchewan Rivers, is the most generously endowed with water power resources. For many years hydro-electric generating stations on the Winnipeg River have supplied most of the electric power requirements in southern Manitoba. However, Manitoba Hydro's high-voltage, long-distance transmission lines will carry ever-increasing amounts of power south from hydro-electric stations on northern rivers to help meet the province's constantly growing power demands.

Almost all of the sizeable water power potential in ONTARIO within easy reach of load centres has been developed and planners have been looking to the more remote sites as new sources of supply. The James Bay hydro-electric power complex, which has been under development since 1958, has involved the construction of three plants on the Mattagami River and one on the Abitibi River. The last of the four plants came into service in 1966. Power from this

Upper Bonnington Generating Station on the Kootenay River.



complex is fed to southern Ontario via extra-high-voltage transmission lines. Investigation of the power potential of Ontario rivers flowing into Hudson Bay and James Bay is part of a comprehensive investigation of the water resources of the region, undertaken late in 1965 by the Governments of Canada and Ontario. Power plant construction is going on in the area north of Lake Huron and several sites in this area and in the headwaters of the Ottawa River are under investigation.

Most of the hydro-electric power produced in the province comes from the generators of the Hydro-Electric Power Commission of Ontario, Canada's largest power producing and distributing organization. Ontario's largest generating station is located on the Niagara River at Queenston, where the Sir Adam Beck - Niagara Generating Stations Nos. 1 and 2, and the associated pumping-generating station have a combined generating capacity of 1,804,200 kw. In addition to the power generated in its own plants, the Commission purchases large amounts of electric power generated outside the province.

QUEBEC is richest of all the provinces in water power resources, possessing more than 40 per cent of the total recorded for Canada. Québec also leads in developed water power - its present installation of 11.0 million kilowatts representing about 47 per cent of the national total. The largest single hydro-electric installation in Canada is the Québec Hydro-Electric Commission's 1,574,260-kw. Beauharnois development on the St. Lawrence River.

A major power scheme which represents a significant advance in the development of Québec hydro-electric resources has been under construction for several years. The scheme, involving the harnessing of the headwaters of the Manicouagan and Outardes Rivers, will permit the eventual installation of some 5.8 million kilowatts on the two rivers. At the end of 1967, a total of 1,550,000 kw. was in service on the two rivers.

The Québec Department of Natural Resources contributes to the production of hydro-electric power by operating 16 storage reservoirs to regulate the flow of the du Nord, Chicoutimi, Au Sable, du Loup, St.-François and du Lièvre Rivers on which hydro plants are located.

The water power resources of NEW BRUNSWICK and NOVA SCOTIA, although small in comparison with those of other provinces, are a valuable source of energy and make a substantial contribution to the economies of the two provinces. Numerous rivers in both provinces provide moderate-sized power sites either within economic transmission distance of the principal cities and towns or advantageously situated for use in development of the timber and mineral resources. These provinces also have extensive

indigenous coal supplies. In PRINCE EDWARD ISLAND, there are no large streams and water power plants are limited in size to those used to operate small mills.

The water power resources of NEWFOUNDLAND, determined on the basis of the limited available streamflow data, are estimated to be of very considerable magnitude. On the island, although the length of the rivers is generally not great, topography and runoff are favourable for hydro-electric power development. Of the substantial capacity installed, a very large portion serves the pulp and paper industry. In Labrador, the Churchill River and its tributaries, now under development, constitute one of the largest sources of water power in Canada.

The YUKON TERRITORY and NORTHWEST TERRITORIES, which together comprise most of Canada's northland, possess extensive water power resources. Power from present developments is used almost exclusively to satisfy the needs of local mines and adjacent settlements. Due to the lack of developed native fuel sources and to transportation difficulties, water power is of special importance in the development of mining areas such as Yellowknife in the Northwest Territories and Mayo in Yukon Territory. In 1948, to encourage the development of the resources of northern Canada, the Federal Government established what is now the Northern Canada Power Commission, to be responsible for the construction and management of electric generating and distributing facilities in the Territories.

In YUKON TERRITORY, most of the resources are located on the Yukon River and its tributaries. The possibility exists of diverting the headwaters of the Yukon River through the Coast Mountains and concentrating the head in a development near the tidewater in northern British Columbia. Such a development, however, would affect adversely the potential of sites on the main river.

Resources in the NORTHWEST TERRITORIES have not been surveyed to the same extent as those in Yukon Territory, but they are nevertheless known to be of considerable magnitude. Extensive water power resources exist on rivers flowing into Great Slave Lake and the Mackenzie River. Of major significance is the hydro-electric potential of the South Nahanni River, which drains to the Mackenzie River via the Liard River. On the basis of preliminary investigations it is estimated that, with total regulation and complete use of the head susceptible to development, the hydro-electric potential of the South Nahanni River would total close to one million kilowatts. Indications are that the rivers draining the District of Keewatin, north of Manitoba, also will contribute materially to the total power potential of the Northwest Territories.

Thermal Power Development in Canada

The incidence of immense water power resources in Canada and the brisk pace of their development has tended to overshadow the very considerable contribution being made by thermal energy in the nation's power economy. At the end of 1967, the total installed thermal generating capacity in Canada was 9,588,000 kw., about 29 per cent of the total of all electric generating capacity in the country. The fact that energy produced in thermal plants during the year accounted for only 20 per cent of the total may be attributed in part to the fact that a considerable amount of capacity installed is maintained for stand-by purposes.

The current emphasis on thermal plant construction is likely to continue and to become more marked as development of the nation's water power reserves becomes more complete.

Conventional Thermal Power

THERMAL GENERATING STATIONS

Almost 90 per cent of all thermal power generating equipment in Canada is driven by steam turbines. The magnitude of the loads now being carried by steam plants has led to the installation of steam units with capacities as high as 300,000 kw. Even larger units of 400,000-kw. capacity will go into service within the next two or three years. The remainder of the load is carried by gas turbine and internal combustion equipment. The flexibility of internal combustion engines makes this type of equipment particularly suitable for meeting power loads in smaller centres, especially in the more isolated areas.

The figures in Table 1 indicate that the provinces of Alberta, Saskatchewan, Nova Scotia and Prince Edward Island depend upon thermal capacity for most of their power requirements. New Brunswick has slightly more thermal than hydro. In Ontario, the hydro capacity was nearly twice the thermal as recently as 1965; however, forecasts based upon present construction schedules indicate that by the early 1970's the province's total installed thermal capacity will have overtaken hydro.

About two thirds of *BRITISH COLUMBIA'S* thermal generating capacity is installed in three plants located in the Vancouver area. The capacity of the largest of these plants, the 90,000-kw. Burrard generating station, is expected to be increased to 750,000 kw. in 1968.

The incidence of vast fuel resources in *ALBERTA* accounts for the emphasis on thermal power generation in the province. Alberta's largest thermal plants are the 582,000-kw. Wabamun steam station and the 405,000-kw. gas turbine and steam station at Edmonton. While large amounts of both hydro and thermal capacity have recently been installed, development projected over the next few years will be predominantly thermal.

Until recently, *SASKATCHEWAN* has relied upon thermal capacity to satisfy the needs of the more settled areas, hydro-electric power generated in the province being used almost exclusively for mining purposes in northern areas. Within the last few years creation of storage on the South Saskatchewan River has led to the development of two hydro sites, one of which was completed in 1966 on the Saskatchewan River. The other is at present under construction on the South Saskatchewan River. However, power needs in the province require the continuing expansion of thermal facilities; the largest under way at present is the 300,000-kw. addition at the Boundary Dam station, one of the two largest thermal stations in the province.

MANITOBA supplements its predominantly hydro-based power supply with a substantial amount of thermal capacity. At the present time, however, the emphasis is on development of the province's water power resources.

ONTARIO has more thermal capacity than any other province in Canada. The thermal capacity installed in the province at the end of 1967 totalled 3,952,000 kw., approximately 39 per cent of the national total. An additional 7.1 million kilowatts, including 2,168,000 kw. of nuclear electric capacity, is under construction or planned for initial operation in the early 1970's.

The largest thermal units in service in Canada are rated at 300,000 kw. Ontario Hydro's Lakeview plant contains five units with this maximum rating. Construction in 1968 should add three more units at Lakeview, boosting its total installed capacity to 2,400,000 kw. Larger units, rated at 500,000 kw. each, are being installed at the Lambton steam station. Even larger units, with installed generating capacities of 540,000 kw. each, are under construction at Pickering nuclear-electric station near Toronto. The Lambton and Pickering stations are designed for total generating capacities of 2,000,000 kw. and 2,160,000 kw. respectively. A large number of oil-burning combustion turbine units ranging from 7,500 to 16,320 kw. are being installed in various parts of the province as stand-by units

and to provide operational flexibility in the event of equipment outage.

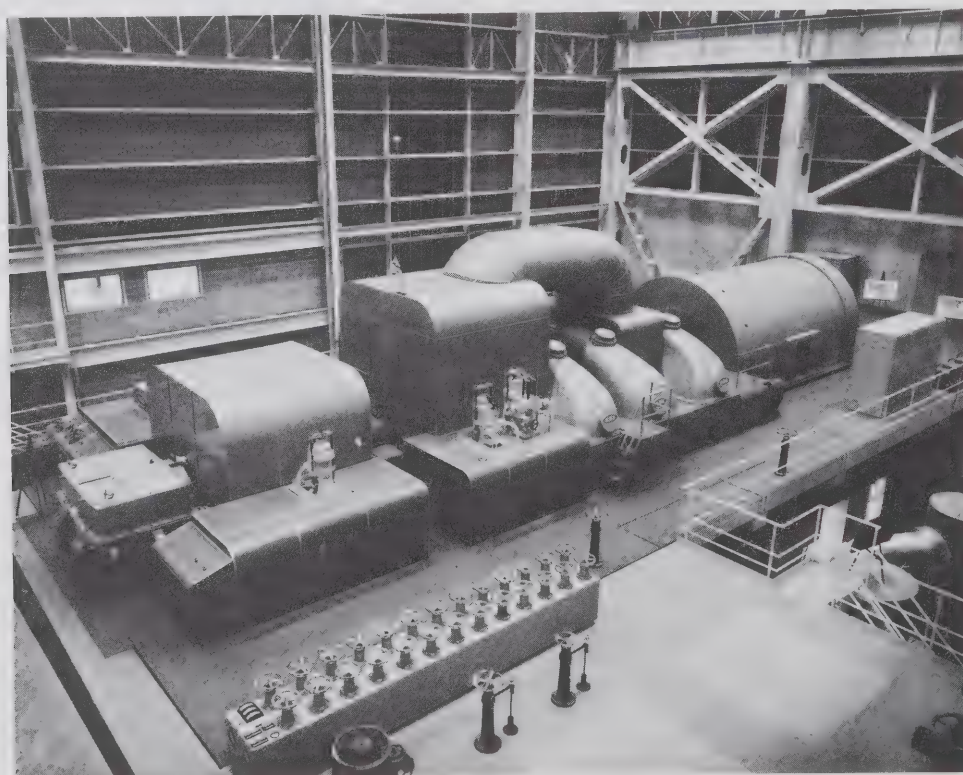
The abundance of *QUEBEC'S* water power wealth, much of it within economic transmission distance of existing demand areas, has tended to limit the application of thermal power to specific local use. However, the growing emphasis on thermal power in other parts of Canada is also beginning to be apparent in Québec, where thermal capacity will not only help guarantee an adequate power supply in the face of increasingly heavy demands but also render the almost exclusively hydro-electric base more flexible through integrated operation. Installed capacity at the largest thermal station in Québec, the Tracy steam station near Sorel, will be raised to 600,000 kw. in 1968, when the fourth and last unit is installed. Québec's first nuclear station, on the south shore of the St. Lawrence River between Gentilly and Bécancour, is scheduled for service in 1971 with 250,000 kw. of electric power generating capacity.

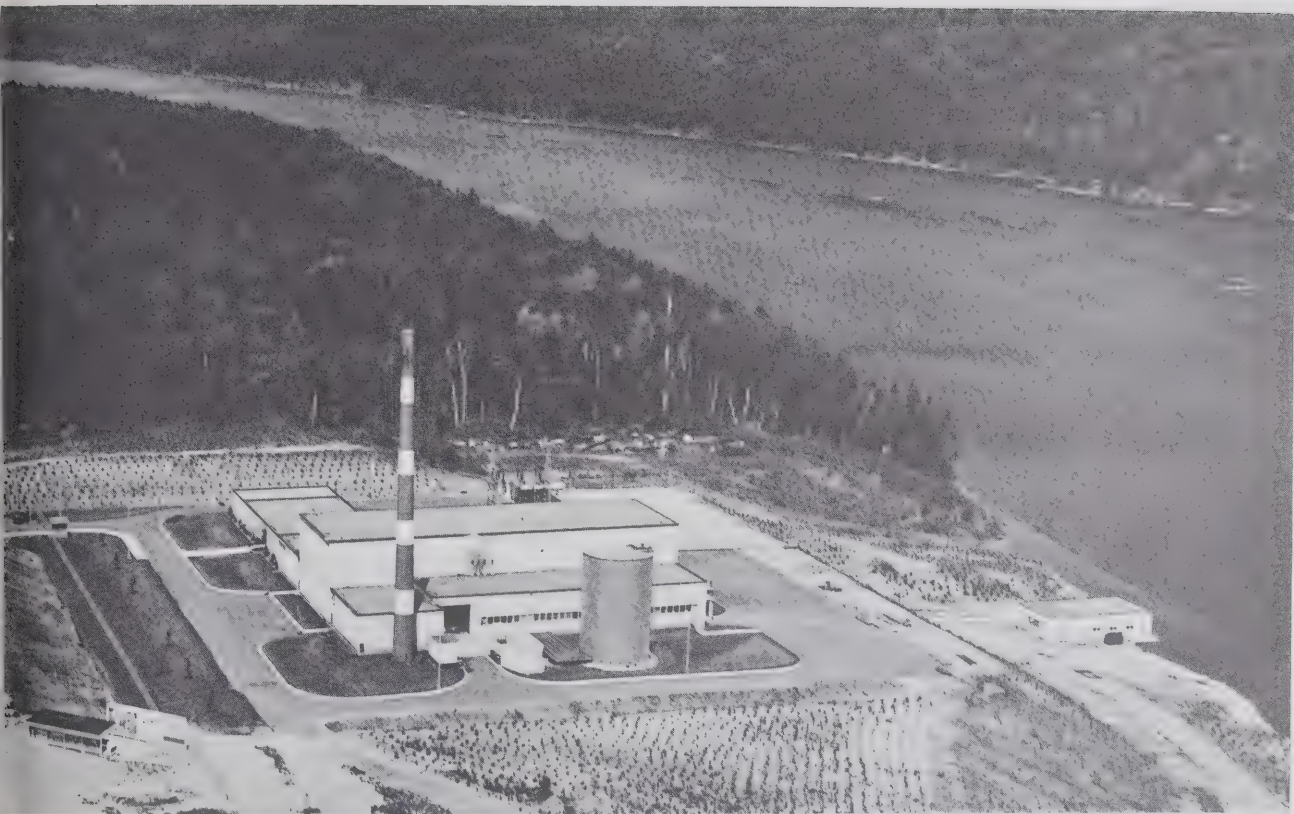
Most of the energy generated in thermal-electric utility plants in *NOVA SCOTIA* is derived from coal, with a smaller amount from petroleum fuels. In *NEW BRUNSWICK* petroleum fuels produce slightly more than half of the thermal-electric energy. *PRINCE EDWARD ISLAND* depends almost

exclusively on thermal sources for its power supply; all of the province's generating capacity is oil-fuelled. With the exception of several large plants in St. John's and Grand Falls, most of the thermal-electric capacity in *NEWFOUNDLAND* is made up of relatively small units used to supply power to small, often isolated communities. With the wealth of water power readily available in the province, it is not likely that Newfoundland will experience the need for large thermal stations for some time to come. Thermal stations supply most of the electric power used in both *NOVA SCOTIA* and *NEW BRUNSWICK*. Nova Scotia's largest thermal station is the 167,500-kw. steam plant at Halifax. New Brunswick's Courtenay Bay steam plant, the largest in the province with a capacity of 263,365 kw., was enlarged in 1967. A substantial addition to the province's thermal capacity will be the new steam plant at Dalhousie, scheduled for initial service in 1969.

Until 1965, most of the power requirements of the *NORTHWEST TERRITORIES* were satisfied from thermal sources. In 1965, however, commissioning of the Twin Gorges hydro station on the Taltson River altered the balance in favour of hydro. In *YUKON TERRITORY*, hydro is the main source of supply. Most of the thermal-electric energy used in the Territories is generated by small diesel units.

Generators at Tufts Cove, Nova Scotia





Rolphton Nuclear Demonstration Unit, Ontario.

FUELS

Canada is favoured not only with abundant water power resources, but with exceedingly generous supplies of the fuels from which energy can be produced. Most important of these are coal, petroleum, natural gas and the radioactive ores used to fuel nuclear reactors.

Coal is by far the country's most abundant fuel resource. Most of Canada's coal is found in the western provinces, chiefly Alberta. Smaller quantities occur in the Maritime provinces of Nova Scotia and New Brunswick. Practically all of Canada's oil and natural gas reserves are located in the western provinces, with the greatest concentration in Alberta. The highly populated, industrial areas of southern Ontario and Québec are largely devoid of indigenous fuel supplies and have to rely upon fuels imported from other provinces and from outside Canada. Uranium, the fuel used in Canada's reactors, is available in considerable quantity in both eastern and western Canada.

In 1966, the latest year for which statistics are available, 66 per cent of the total energy produced in thermal-electric utility plants was derived from coal. Gas,

most of which is natural gas, accounted for 22 per cent and petroleum fuels, 12 per cent.

Ontario was the main user of coal in 1967, with Alberta, Saskatchewan and Nova Scotia accounting for the bulk of the remainder. Almost all of the gas was used in western Canada, principally in Alberta. Petroleum fuels were used in every province in Canada. New Brunswick accounted for the largest quantity of petroleum fuels used, followed by British Columbia and Nova Scotia.

Nuclear Thermal Power

Commercial electric power generated from the heat of nuclear reaction was first produced in Canada in 1962 in the 20,000-kw. Nuclear Power Demonstration station at Rolphton, Ontario.

Research into reactor design and the application of nuclear energy in the electric power field are among the more important responsibilities of Atomic Energy of Canada Limited, a Government of Canada Crown Company incorporated in 1952.

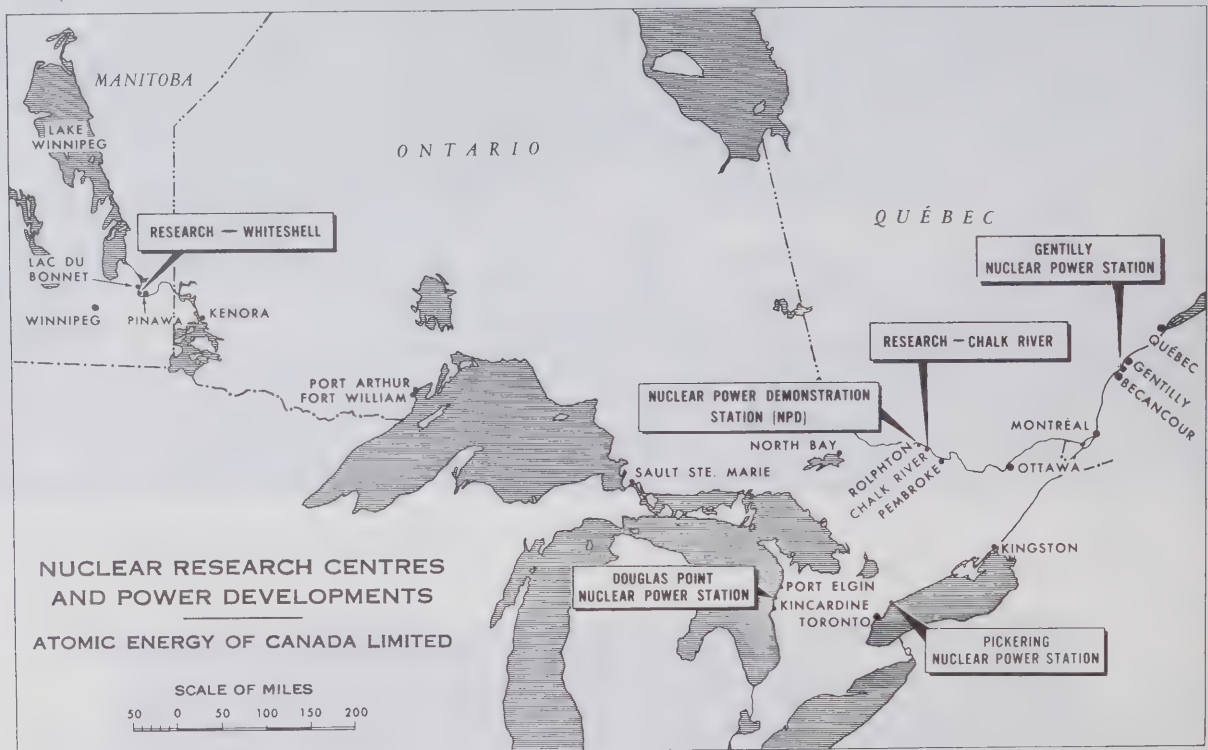
CANDU REACTOR

AECL has concentrated on the development on the CANDU reactor, which derives its name from "Canadian Deuterium Uranium". The CANDU reactor uses natural uranium as a fuel and heavy water as the moderator. Natural uranium is a low-cost nuclear fuel with a high energy yield, and represents a relatively minor item in the cost of power production compared to the use of other fuels; its availability in commercial quantities in Canada is a further advantage.

system is the Gentilly Station, scheduled to go into operation in the Province of Québec in 1971

NUCLEAR POWER STATIONS

The Nuclear Power Demonstration station at Rolphton, has been used extensively to demonstrate the ability of the system to operate at a high capacity factor and to determine the nature and predictability of outages. Fuel changes while the system is in operation have become routine and a considerable amount of



The Canadian nuclear power reactor also offers the simplest of nuclear fuel cycles. Sufficient energy can be extracted from the fuel so that the economics of the system do not require a value to be placed on the spent fuel. There is, therefore, no need to carry out costly chemical processing of the spent fuel unless the value of the remaining fissile material becomes sufficiently high to make chemical processing an economic proposition. The spent fuel is an ideal package for simple underwater storage and no large volume of highly radioactive liquids from a chemical processing plant has to be handled and contained.

Another step in the development of the Canadian reactor system was a change in the coolant of the CANDU system from pressurized heavy water (PHW) to boiling light water (BLW). This new system offers savings in unit capital costs and fuelling costs and consequently in unit energy costs. The first Canadian commercial nuclear-thermal station to use the new BLW

research into the sources of heavy water losses has been carried out. As a result of this research, losses have been cut considerably and the NPD is demonstrating that a very acceptable heavy water loss rate is attainable.

At Douglas Point on the shore of Lake Huron, the country's first full-scale nuclear power station went into operation in 1967. The station, built by Ontario Hydro and Atomic Energy of Canada, houses a 200,000-kw. CANDU reactor which uses heavy water as both coolant and moderator.

The nuclear-fuelled units (540,000 kw. each) in the Pickering Station, now under construction near Toronto, will compete in size with the largest conventional thermal units now coming into service. The Pickering Station will have four units scheduled to come into service at the rate of one each year from 1970 to 1973.

The Gentilly Nuclear Station with

50,000 kw. of nuclear electric capacity, is scheduled for service in 1971. The Gentilly station is located at Pointe aux Roches on the south shore of the St. Lawrence River between Lac Beauport and Lac Beauport, about 10 miles from Trois Rivières.

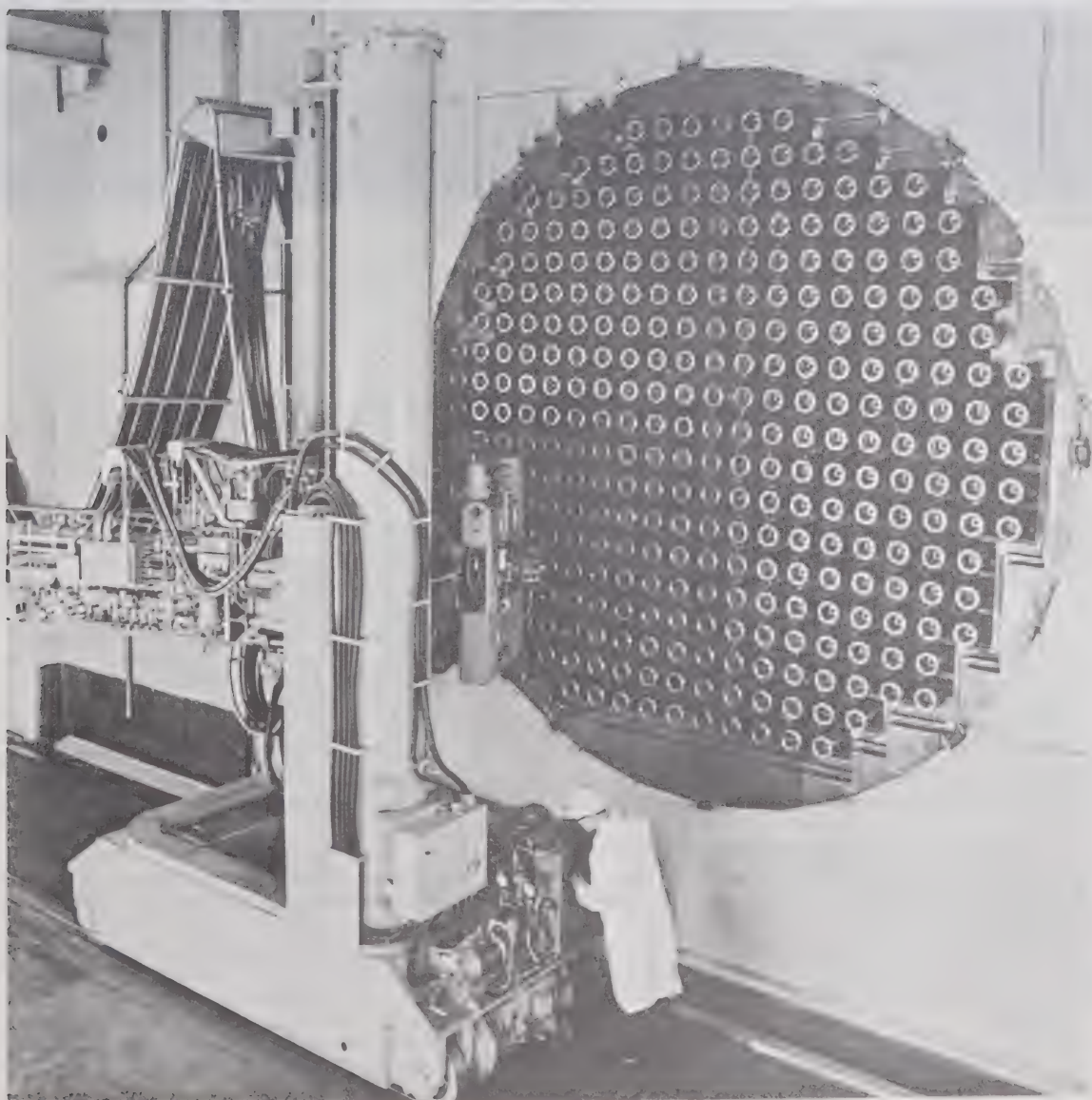
NUCLEAR RESEARCH IN CANADA

The principal nuclear research and development centres in Canada are AECL's Chalk River Nuclear Laboratories in Ontario and its Whiteshell Nuclear Research Establishment in Manitoba.

The five reactors at Chalk River - none of which is a power reactor - are used for fundamental research in physics, chemistry, biology and medicine and for engineering studies related to the development of economic nuclear power or the production of radio-active isotopes.

At Whiteshell, the principal activity is research in the development of economic nuclear power through studies in the fields of chemistry, chemical engineering, fuel development, metallurgy and engineering. The reactor at Whiteshell is an engineering test reactor for use in testing fuels, heat transfer materials and power reactor systems.

Loading the calandria at Douglas Point nuclear power station.





*Transmission lines spanning
Laurentian Park in Quebec.*

Electric Power Transmission

In the early days of the power industry in Canada, power systems were small and designed to supply specific local needs. The nature of the loads handled by these systems was not such as to warrant the expense of interconnection between systems. As time went on, however, the loads increased and changed in nature, the systems grew in size and improved techniques reduced transmission costs. The benefits of interconnection to integrate smaller power systems were re-appraised in the light of changing conditions and were found to offer advantages which far outweighed the costs.

The resulting amalgamation of the small systems into larger operating groups has gone on steadily and today most of the power produced in Canada comes from generating stations which are components of large, integrated and often interconnected power systems operated by power utilities and companies in the various provinces.

The integral role of power transmission in the process is obvious. In the days of small,

self-contained power systems, it was not necessary to carry power over great distances and low operating voltages were adequate. With the increase in transmission distances from the point of generation to the point of distribution and thence to the user, transmission methods had to be improved and operating voltages increased. Moreover, the growth in power demand, which was forcing power producers to consider the development of hydro-electric sites previously considered to be outside the economic transmission radius, added impetus to research in the field of extra-high-voltage (EHV) transmission.

This research has resulted in a successive stepping up of transmission voltages. In 1965, power was carried for the first time in Canada at 735-kv. when the transmission line between the Manicouagan-Outardes hydro complex in Québec and the cities of Québec and Montreal went into operation. Elsewhere in Canada, there are in operation or under construction, a number of transmission lines designed for operation at voltages of 500 kv. or more. In British Columbia, two 500-kv. lines connect the British

Columbia Hydro and Power Authority system with the Bonneville Power Administration system in the State of Washington. The lines are being operated for the present at 230 kv. Power from the Peace River will be carried to the lower Mainland of British Columbia via a 574-mile, 500-kv. line, at present under construction. The 435-mile, 500-kv. line from a complex of hydro stations in the James Bay watershed to Toronto was completed in 1967.

At present, power in Canada is transmitted exclusively over ac (alternating current) lines. However, the advantages of dc (direct current) transmission are encouraging a number of Canadian power producers to turn to construction of dc lines. One such line with a rating of 260 kv., is expected to go into service in 1968 to augment an existing ac line between Vancouver Island and the British Columbia mainland. Another, in Manitoba, will carry power from the Nelson River to Winnipeg at 450 kv.

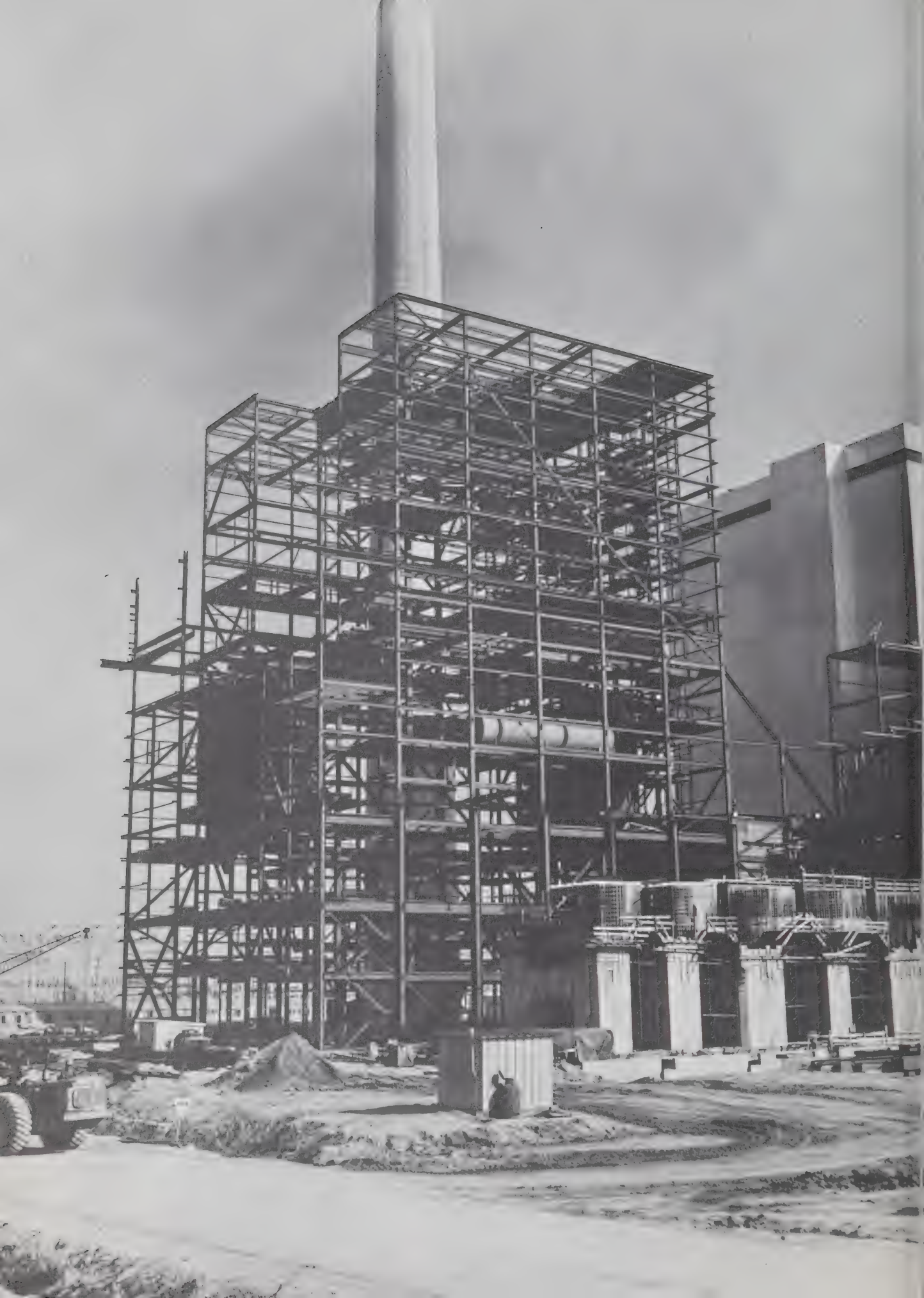
With the large increase in transmission distances, transmission costs will represent a much higher factor in the total cost of supplying power. The search for economies has led to

many improvements not only in the materials used but also in tower erection and cable stringing methods. Guyed aluminum V-shaped or Y-shaped transmission towers are being used increasingly in place of self-supporting towers where the terrain is suitable, and erection costs are being lowered by using helicopters to transport tower sections to the site and for tower assembly. The use of helicopters for spraying for bush control on line right-of-way and for line inspection and maintenance is becoming more widespread.

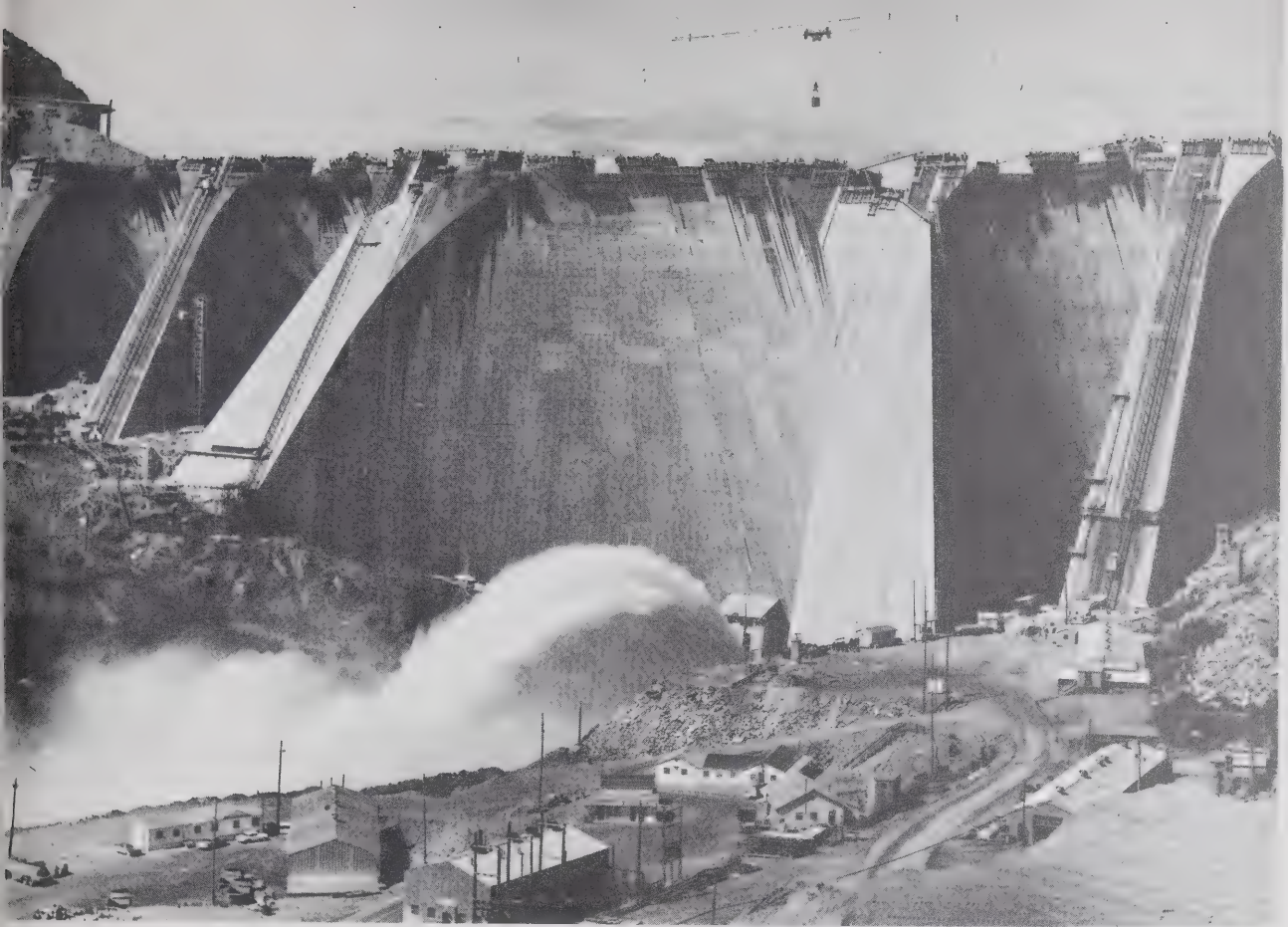
At present, interconnections of from 66 kv. to 500 kv. exist between systems in Alberta and British Columbia; between Saskatchewan, Manitoba and the northwestern Ontario system; between the interconnected northeastern and southern Ontario systems and Québec, and between New Brunswick and Nova Scotia.

There are important international interconnections between British Columbia and the State of Washington; Ontario and the State of Michigan; Ontario and the State of New York; Québec and the State of New York and between New Brunswick and the State of Maine.

Construction at Lambton thermal plant, Ontario.



PROGRESS IN DEVELOPMENT - 1967



Central arch of Manic 5 dam. Construction scheduled for completion in 1968.

General Review

In 1967, Canada's electric generating capacity was raised by a total of 2,140,190 kilowatts (kw.). Thermal electric generating capacity accounted for 1,244,340 kw. or slightly more than half of the total; the remaining 915,850 kw. was installed at hydro developments. The facilities placed in service in 1967 raised the total generating capacity in Canada to 3.0 million kilowatts, consisting of 23.4 million kilowatts hydro and 9.6 million kilowatts thermal.

Scheduled for initial operation in 1968 is 2,800,000 kw. of generating capacity, of which 1,516,450 kw. is hydro. Including the capacity scheduled for 1968, Canada's power producers have under construction or have scheduled a total of 24.8 million kilowatts, 15.2 million kilowatts in hydro plants and 9.6 million kilowatts in thermal plants.

In 1959, the year of record high installation in the electric power generating field in

Canada, a total of 2.5 million kilowatts was placed in service. The years 1967 and 1965, with some 2.2 million kilowatts each, share second place. However, with almost 2.8 million kilowatts scheduled for service in 1968, a year of record breaking installation is in sight.

HYDRO-ELECTRIC DEVELOPMENTS

Development of hydro-electric generating capacity continued apace during 1967 with 915,850 kw. of new capacity being brought into service. Quebec's share, 261,030 kw., was highest among the provinces, followed in order of magnitude by Newfoundland, Alberta, Ontario, British Columbia and New Brunswick with new capacities ranging from 229,500 kw. to 100,400 kw.

The new hydro capacity for 1967 includes one large unit which was scheduled for initial service in 1966 in Alberta. The unit, with a generating capacity of 161,500 kw., previously

was reported in service in 1966, but did not begin supplying energy until early in 1967.

Some 1,516,450 kw. of new capacity is scheduled for service in 1968; another one million kilowatts previously scheduled for installation during 1968 in Quebec has been delayed, with the result that the amount of new hydro-electric capacity to be brought into service in 1969 should set a new record.

The construction of several large projects continued during 1967. Outstanding are the giant Manicouagan-Outardes hydro complex in Quebec, the Peace River project in British Columbia and the Churchill Falls hydro project in Labrador. Of lesser size but of great importance to the respective provinces are new hydro developments in Alberta, Newfoundland and Manitoba.

In Quebec, a total of 188,370 kw. of hydro capacity was brought into service during 1967 at the Manicouagan-Outardes project. By the mid-1970's, the installed capacity on the two rivers will be raised from the present 1,560,000 kw. to a total of almost six million kilowatts at nine sites.

In British Columbia, all phases of the Peace River power project are progressing satisfactorily for initial operation in 1968. The power dam was completed in 1967 with the placing of the last of 100 million tons of fill. The generating station is designed for a capacity of 2,270,000 kw. in ten units, three of which are scheduled for service late in 1968.

Construction of the Churchill Falls hydro plant in the wilderness of Labrador was well under way in 1967. Utilizing a head of 1,040 feet, this imaginative project will ultimately realize 5,250,000 kw. and rank as one of the world's largest hydro stations. Plans call for first power in 1972. Almost all of the electric power developed will be sold to Quebec.

In Manitoba, installation of 1,220,000 kw. in twelve units at Kettle hydro station on the Nelson River is proceeding on schedule. Four units with a total generating capacity of 406,000 kw. are scheduled for service in 1971.

In 1967, three units with a total generating capacity of 229,500 kw. were brought into service in the Bay d'Espoir hydro plant in Newfoundland. Another 161,500 kw. in one unit was placed in service in the Big Bend plant in Alberta, raising the total generating capacity to 305,500 kw. in two units.

THERMAL POWER PROJECTS

Heavy demand upon Canada's electric generating facilities has led to the construction

of an increasing amount of new thermal capacity each succeeding year. The 1,244,340 kw. of new capacity installed in 1967 marked the third consecutive year of record high installation. The 1,254,000 kw. of thermal generating capacity already scheduled for installation in 1968 points to a continuation in this trend.

Almost every province in Canada has important thermal generating capacity under construction. The most extensive program however, is that of Ontario which will account for about 7,100,000 kw. of the total of 9,600,000 kw. currently under construction or proposed for construction in Canada.

Conventional Thermal Power

A 300,000-kw. steam unit installed in the Wabamun thermal plant in Alberta was the largest single unit installed in Canada during 1967. With a total generating capacity of 582,000 kw. the Wabamun capacity is the largest of any plant hydro or thermal, on the prairies. It would have been the largest thermal plant in western Canada were it not for the fourth 150,000-kw. unit which was brought into service in 1967 at the Burrard steam plant in British Columbia, raising that plant's generating capacity to 600,000 kw.

In Quebec, a 150,000-kw. unit was installed at Tracy, increasing the total generating capacity to 450,000 kw. in three units. In-service date for a fourth and final unit has been delayed until 1968.

A 100,000-kw. unit in the Courtenay Bay steam plant in New Brunswick was scheduled to be in service before the end of 1967. With the total generating capacity increased to 263,365 kw. the plant has become the largest in the Atlantic Provinces.

Construction delays caused a rescheduling of two of the final three units at the 2,400,000 kw. Lakeview thermal plant near Toronto. As now scheduled, all three 300,000-kw. steam units should begin operation in 1968.

Significant because of their proposed size are two steam plants, the Lambton thermal station under construction near Sarnia, Ontario and the Nanticoke thermal station, which is proposed for construction in the Niagara region. These two plants will consist of four 500,000-kw. units each, making a combined total of 4,000,000 kw.

Nuclear Power Stations

Canada's first full-scale nuclear power station, the 200,000-kw. Douglas Point Nuclear Power Station on the eastern shore of Lake

Huron, between Kincardine and Port Elgin, began initial service early in 1967.

Preceding Douglas Point was the 20,000-kw. Nuclear Power Demonstration Plant (NPD) which began service in 1962 at Rolphton, Ontario. Operation of the NPD station over the past several years demonstrated the soundness of the Canadian type of nuclear power reactor and helped to establish the design for the larger Douglas Point station and for two other stations under construction in Ontario and Quebec.

The larger of the nuclear stations under construction is at Pickering, Ontario, on the shore of Lake Ontario, just east of Toronto. The station will consist of four 540,000-kw. units, one to commence operation in each of the years 1971 through 1974. The second station, located in Quebec on the south shore of the St. Lawrence River between Gentilly and Bécancour, is the Gentilly Nuclear Power Station. The Gentilly station will have an output of 250,000 kw. and is expected to be placed in service in 1971.

POWER TRANSMISSION

Continuing research into electric power transmission techniques has led to a progressive

stepping up of voltages to the 735 kv. which was realized in Quebec in 1965.

At present, power transmission in Canada is achieved solely via alternating current (ac) lines. Direct current (dc) transmission lines have been under consideration for some time but it was not until 1966 that dc line construction actually got under way in Canada. By 1968, Canada's first dc line, with a rating of ± 260 kv., will increase the power supply available to Vancouver Island by augmenting an existing ac transmission line interconnection with the British Columbia mainland. In Manitoba, construction of ± 450 -kv. dc lines for transmitting Nelson River power some 560 miles to the Winnipeg area got under way in 1967.

The expanding technology of high voltage transmission has brought many remote hydro sites within economic transmission distance of load centres and has engendered interest in the possibilities of a national power grid interconnecting major systems supplying the individual provinces. The Government of Canada is co-operating with provincial authorities in carrying out studies to determine the physical and economic possibilities of establishing such a grid.



Progress in the Provinces

British Columbia

A net total of 303,225 kw. of generating capacity was installed during 1967 in British Columbia, 105,600 kw. in hydro plants and 197,625 kw. in thermal plants. Not included in these totals is a net increase of 4,500 hp., consisting of hydro turbines connected directly to mechanical equipment. Scheduled for service in 1968 is a further 861,700 kw., consisting of 708,200 kw. hydro and 153,500 kw. thermal. Installations scheduled beyond 1968 will yield more than one and a half million kilowatts of new capacity, all of which will be hydro.

Industrial companies accounted for half of the capacity brought into service in 1967. It should be emphasized, however, that most of the electric power development in the Province is being carried out by the provincial Power Authority.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

Hydro-Electric Projects: Over the past 10 years, the growth rate in electric power development in British Columbia has averaged more than 10 per cent per year. To meet this rapid rate of growth in future years, the Authority is developing the Peace River hydro-electric project and is planning the development of the Canadian portion of the Columbia River.

Construction of the giant Portage Mountain hydro plant on the Peace River near Hudson Hope is continuing ahead of schedule. The dam was completed in 1967 and three of the project's ten 277,000-kw. units are scheduled for service in 1968. The balance of the 2,270,000-kw. capacity for which the Portage Mountain is designed represents all of the hydro capacity scheduled for service in the Province after 1968.

The dam at Portage Mountain, officially designated the W.A.C. Bennett Dam in 1967, is 600 feet high and has a crest length of 6,700 feet. The reservoir created by the dam has a surface area of 680 square miles and a volume of 62 million acre-feet.

Largest contracts ever awarded in British Columbia were for construction of the Peace River powerhouse, \$76.9 million and the W.A.C. Bennett Dam, \$73 million.

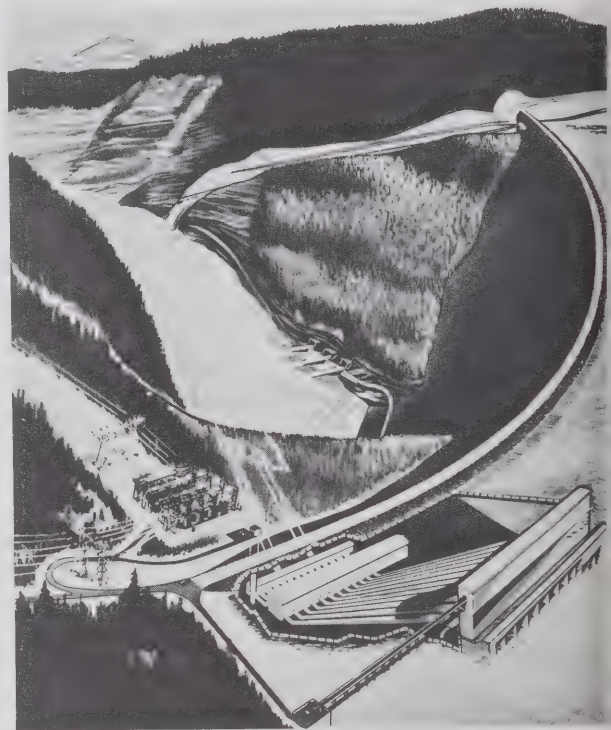
Construction of the 574-mile, 500-kv.

transmission line from Portage Mountain to Vancouver is progressing favourably.

COLUMBIA RIVER

In September, 1964, the Governments of Canada and the United States exchanged instruments of ratification for the Columbia River Treaty and Protocol, clearing the way for construction of this ambitious international power and flood control project.

Under the Treaty, Canada will construct the Duncan, Arrow and Mica Dams in Canada. In return, Canada has received payment for one-half of the power benefits accruing in the United States from the regulation of 15.5 million acre-feet of water which will be stored behind the three dams. Also, Canada is entitled to payment



Artist's conception of the W.A.C. Bennett Dam on the Peace River.

of one-half of the estimated flood damage prevented in the United States by the operation of the dams for flood control.

The treaty required that the Duncan Dam be operational by April 1, 1968, the Arrow Dam by April 1, 1969, and the Mica Dam by April 1, 1973.

Construction of Duncan Dam was completed and the dam was declared operational on July 1, 1967, well ahead of schedule. This resulted in partial payment by the United States of flood control benefits, due as each of the three Columbia storage dams is declared operational, and brought to the Province special energy benefits, representing Canada's share of the downstream benefit from storage which became available ahead of schedule.

The earth-filled Arrow Dam, 190 feet high with a crest length of about 2,850 feet, will impound 7.1 million acre-feet of water. Construction progress on this dam points to its completion in late 1968, ahead of schedule.

Mica Dam, highest of the three dams with a crest 645 feet above bedrock, will provide 19 million acre-feet of storage in a reservoir 90 miles long. Construction of two 45-foot diameter diversion tunnels, each about 3,200 feet long, was completed during 1967 to carry water past the construction site.

Completion of the storage reservoirs will facilitate development of several million kilowatts of hydro-electric capacity in the Canadian portion of the basin.

Thermal-Electric Projects: The fourth 150,000-kw. unit at Burrard generating station was completed in 1967, increasing the total installed capacity at Burrard to 600,000 kw. A fifth 150,000-kw. unit is scheduled for service late in 1968. The ultimate capacity of this station is 900,000 kw. in six units.

The Authority installed gas turbines of 6,000-kw. capacity at Prince Rupert and Chetwynd during 1967. Small diesel units are being installed at Port Hardy and Atlin, and in the Columbia Valley.

Transmission Systems: A long-term plan to extend the power supply from the mainland to Vancouver Island using high-voltage, direct current, submarine cables, is moving ahead. Terminal equipment was arriving and being installed during 1967. The submarine cables are scheduled to be in operation during 1968.

A 120-mile, 287-kv. line from Kitimat to Prince Rupert went into operation in 1967. This connection is designed to augment locally-generated power supplies in the Prince Rupert

area with power from the Aluminum Company of Canada's Kemano hydro plant. Ultimately, the Prince Rupert area and the Skeena and Bulkley Valleys will be fully integrated with the provincial grid at Prince George. For this purpose, construction of a 500-kv. line westward from Prince George to Glenannan was completed in 1967. A 36-mile, 138-kv. line from Burns Lake to Glenannan and another, 27 miles long, from Topley to Burns Lake, remained under construction at year's end. In the lower mainland, nine miles of 230-kv. line extending from the Burrard station to North Vancouver was under construction, while a similar line, 52 miles long, from Cheekye to Sechelt Substation, was completed and placed in operation at 138 kv.

To serve the continuing demand for power, new and increased transformer substation facilities were added in Vancouver, Prince George, Kamloops and Vancouver Island, and at various other points throughout the Province. Over 1,100,000 kva. of transformer capacity was installed at new and existing substations during 1967.

COMINCO LTD.

The fourth and final generating unit at the Company's Brilliant hydro station on the Kootenay River is scheduled for installation in early 1968. This 27,200-kw. unit will bring the generating capacity at Brilliant to 108,800 kw.

The Company is planning to construct a second transmission line from Nelson to Kimberley. This line will operate at 230 kv.

MacMILLAN BLOEDEL LIMITED

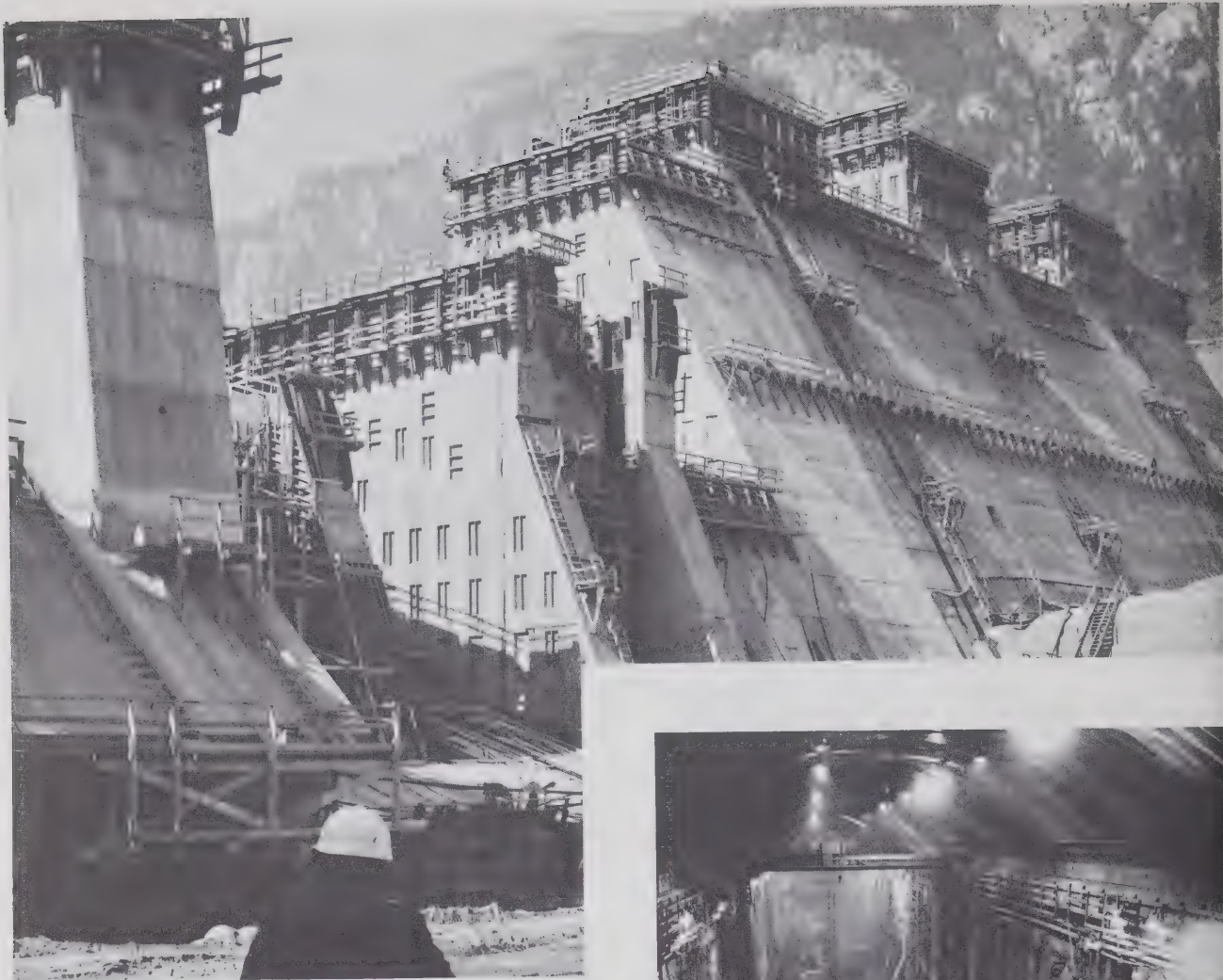
The Company completed installation of a 36,000-kw. steam turbo-generator at the Powell River plant during 1967. The installation raises the plant capacity to 50,925 kw. in five units.

CROWN ZELLERBACH CANADA LIMITED

In 1967, the Company completed the replacement of six 2,000-hp. turbines with three turbines having a total capacity of 16,500 hp. at its Ocean Falls hydro plant on the Link River. The 2,000 hp. turbines had been in operation for about fifty years. These turbines are not used for hydro-electric power generation but for direct driving of groundwood pulping stones used for the production of pulp.

ALUMINUM COMPANY OF CANADA LIMITED

Construction of the eighth 105,600-kw. unit at the Company's Kemano hydro station was completed during 1967 increasing the total



The Arrow dam under construction on the Columbia River.

capacity of the station to 812,800 kw. Retail electric power distribution in the Kitimat area was transferred from the Company to the British Columbia Hydro and Power Authority.

NORTHWOOD PULP LIMITED

The Company installed a single-unit 1,500-kw. steam plant in 1967 at its Prince George mill to maintain basic loads in case of power interruptions.

GRANDUC OPERATING COMPANY

Construction of a power plant and 7,500-ton concentrator began in 1967 at Tide Lake, 30 miles north of Stewart. The new thermal plant will consist of two generating units with a total capacity of 15,000 kw.



Excavation of the powerhouse at the Portage Mountain Hydro Station on the Peace River.

Alberta

Alberta's total installed electric generating capacity rose by 504,905 kw. in 1967. Hydro stations accounted for 171,220 kw. and thermal for 333,685 kw. Although no new capacity is scheduled for completion in 1968, thermal capacity totalling 780,000 kw. is planned or under construction for service in 1969 or later.

CALGARY POWER LTD.

Installation of the second generating unit at Calgary Power's Big Bend hydro development on the Brazeau River was not completed in 1966 as previously reported but was delayed until early in 1967. At the associated pumping-generating station, installation of the second 9,720-kw. unit also was delayed until 1967.

Consisting of a 161,500-kw. generator

driven by a 250,000-hp. turbine, the new unit at Big Bend has the highest rating of any hydro unit in service in Canada at this time.

The new capacity added in 1967 has raised the total capacity of the Big Bend development to 324,940 kw., including 19,440 kw. at the pumping-generating station.

At Big Bend, water is transferred from the storage reservoir to the powerhouse via 12-mile canal. The pumping-generating plant is incorporated into the outlet of the storage reservoir. Under operating conditions, when the reservoir storage level is higher than the water level in the canal, the pumping-generating units can function as generators to produce power; when the reservoir level is lower than the canal level, the units operate as pumps to replenish the canal.

The Sentinel thermal station at Coleman was purchased in 1967 by Calgary Power, adding another 10,000 kw. of generating capacity to

*View of Brazeau Dam on the Brazeau River
in Alberta.*



the Company's network. The plant and all transmission facilities east of the Alberta-British Columbia boundary were purchased from the British Columbia Hydro and Power Authority after the Authority was successful in its bid to purchase the East Kootenay Power Company.

The extension of the Wabamun thermal station was completed in 1967 with the bringing into service of a 300,000-kw. coal fired unit. Completion of the new unit more than doubled Calgary Power's thermal capacity from about 285,000 kw. to the present total of approximately 595,000 kw.

At the new Sundance thermal station on the south side of Lake Wabamun, work on the installation of a 300,000-kw. coal-fired unit is underway. The new unit is scheduled for service in 1971.

Operation of the Company's 1,800-kw. Athabasca thermal station was discontinued and the station's three units taken out of service.

The Company's transmission network was extended during 1967 by 339 circuit miles to bring the total network mileage to 6,675 miles. Three quarters of the new lines were rated at 138 kv. or 230 kv. Six new substations were constructed in 1967 and another 20 were modified.

CANADIAN UTILITIES LIMITED

Extension of the Company's 66,000-kw. Battle River thermal station near Forestburg continued through 1967. A 150,000-kw. coal-fired unit is being installed for initial operation in 1969. Construction of the main building is well underway. Concrete work for foundations and for the turbo-generator block were completed by the end of 1967.

Although the Company does not operate hydro-electric generating facilities, a study of the hydro potential of the Smoky River in the Grande Prairie area has been carried out and eight sites are under consideration for possible development. The capacities that could be installed at the eight sites vary from 60,000 kw. at the confluence of the Smoky and Kakwa Rivers to 620,000 kw. at Mile 283 from Mount Robson, near the town of Nampa.

Effective January 1, 1967, ownership of the thermal plant and facilities of the Fort McMurray Power Company Limited in Fort McMurray was transferred to Canadian Utilities Limited. During 1967, the installed capacity of the plant was raised to 4,625 kw. following the replacing of a 350-kw. unit with a 500-kw. unit.

The Company's transmission line mileage was increased in 1967 by a total of 102 miles,

consisting of 67.5 miles at 138 kv. and 34 miles at 72 kv.

A new 33,330-kva. transformer station was installed by the Company at Crystal Lake, new capacities of 3,000 - 4,000 kva. were added to existing substations at Castor, Willingdon and Mercer Hill and the 2,500 kva. equipment operating at Lloydminster was dismantled and rebuilt at Kitscoty.

CITY OF EDMONTON

The designing, planning and site preparation for the new Clover Bar thermal station were completed in 1967. Major construction at the site will begin in 1968. The first of two 165,000-kw., gas fired units is scheduled for service in 1970 and the second unit in 1973. During 1968, a 72-kv. line will be installed to connect the City's main plant with the new remote controlled Victoria Substation in the city centre area.

GREAT CANADIAN OIL SANDS LIMITED

At Fort McMurray, the Company installed the second steam turbo-generator unit with a capacity of 30,500 kw., raising the plant's total generating capacity to 61,000 kw.

NORTHLAND UTILITIES

During 1967, the Company closed down its High Level and Worsley thermal stations involving installed generating capacities of 2,350 kw. and 1,500 kw. respectively. Before the year's end, however, line difficulties necessitated re-commissioning two 500-kw. units at High Level. Elsewhere in Alberta, the Company replaced small units having a combined generating capacity of 1,070 kw. with units totalling 3,175 kw.

CANADIAN SUGAR FACTORIES LIMITED

A 4,300-kw. steam unit was installed at the Company's Taber factory, raising the generating capacity to 7,975 kw. in three units.

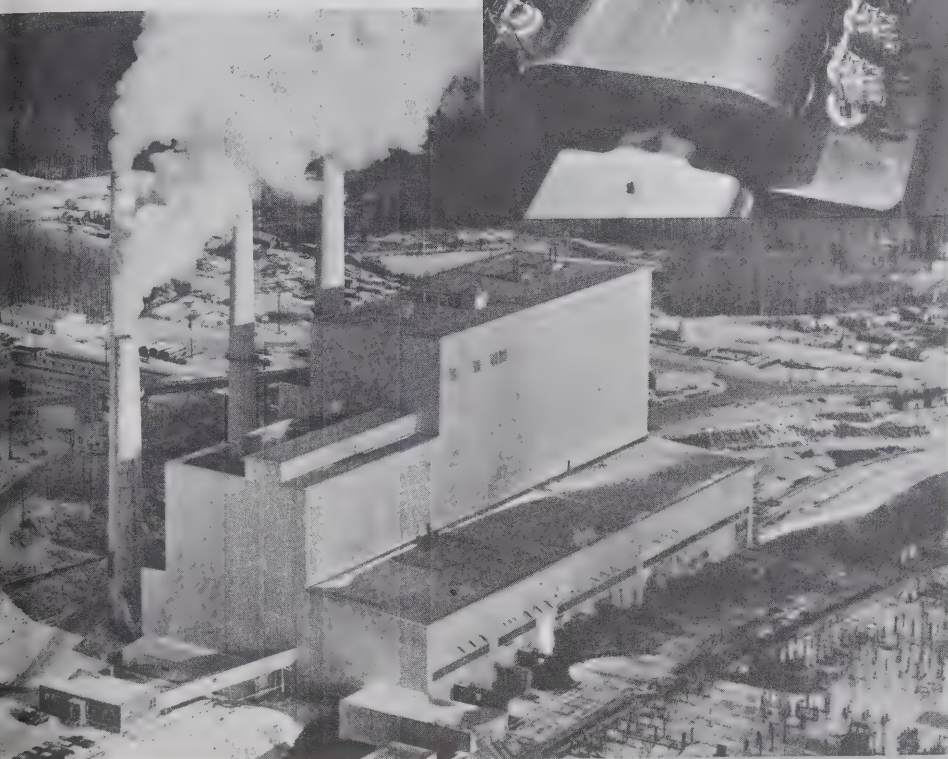
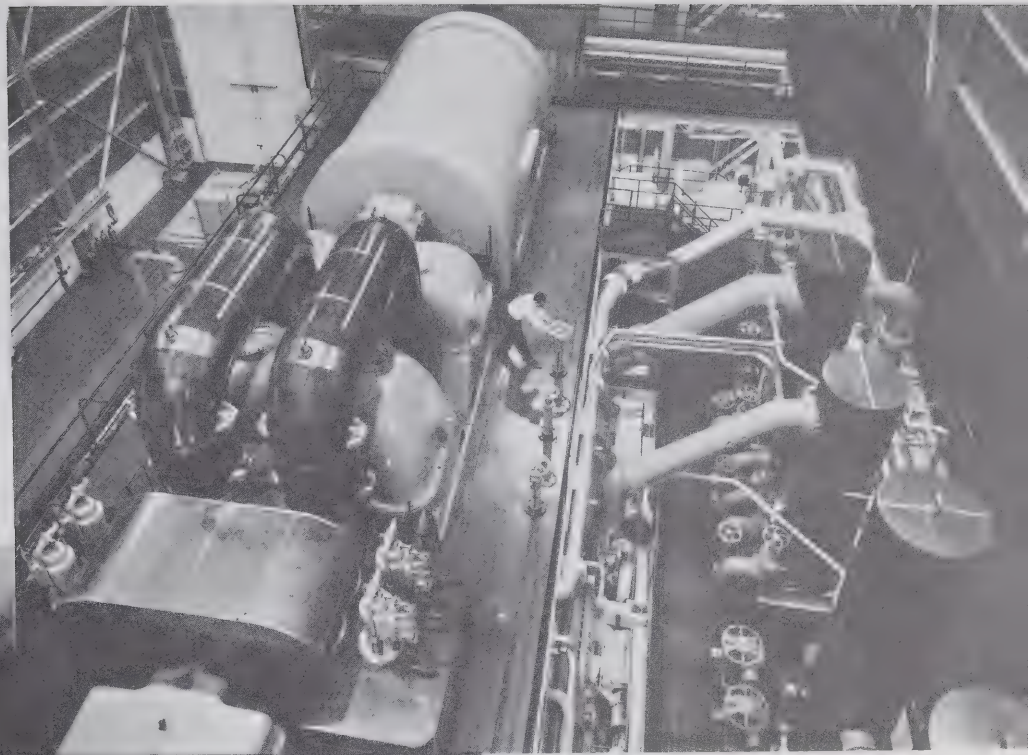
THE BRITISH AMERICAN OIL COMPANY LIMITED

Two 300-kw. internal combustion units were installed in the Company's Morrin Gas Plant.

ALBERTA DEPARTMENT OF PUBLIC WORKS

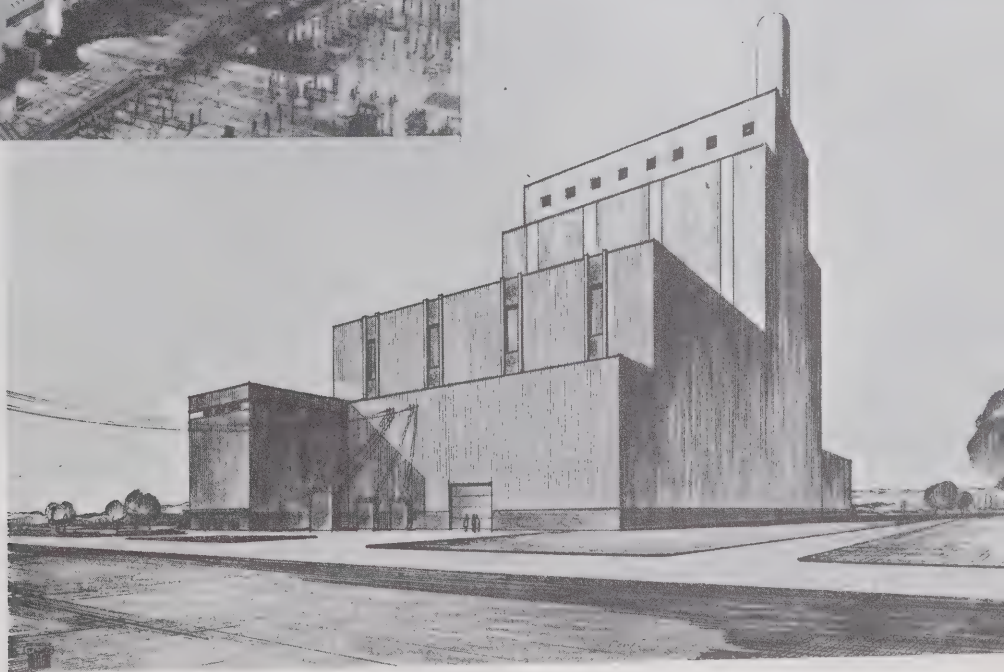
A 500-kw. gas engine unit was installed at the Southern Alberta Institute of Technology plant at Calgary, replacing a 130-kw. steam unit that was retired from service.

*Turbo-generator at Wabamun
thermal plant, Alberta.*



Wabamun steam plant in Alberta.

*Artist's conception of Sundance
thermal plant under construction
near Wabamun, Alberta.*

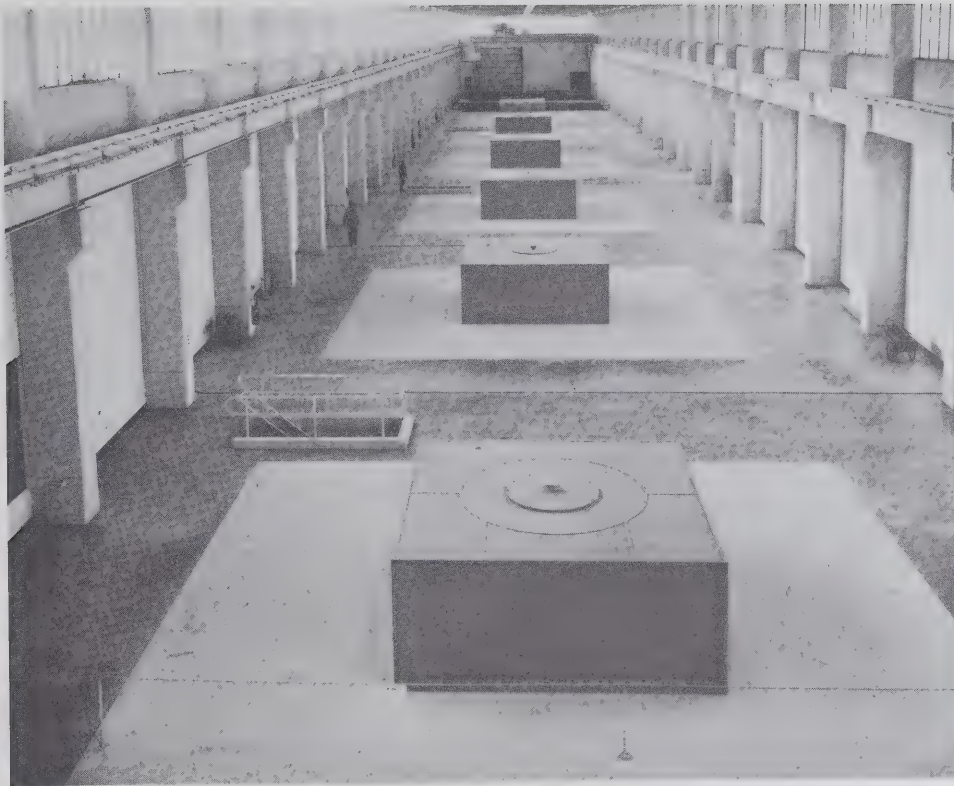




*Two views of the South Saskatchewan
River Project near Outlook,
Saskatchewan.*



*Control shafts at the dam on the So
Saskatchewan River Project.*



Generators at Squaw Rapids Hydro Station.

Saskatchewan

Saskatchewan's electric power generating capacity increased by 35,520 kw. of thermal capacity in 1967. Scheduled for service in 1968 and later are 168,000 kw. of hydro capacity and 300,000 kw. of thermal capacity.

SASKATCHEWAN POWER CORPORATION

The Corporation's Success thermal station near Swift Current was placed in service in 1967 with the installation of three 11,840-kw. gas turbine units. The 35,520-kw. station will augment the Corporation's 14,550-kw. station at Swift Current.

Construction of the South Saskatchewan River Project near Outlook continues. The dam and reservoir at the project are being built by the Prairie Farm Rehabilitation Administration for irrigation purposes, but hydro-electric generating facilities are being incorporated. The Saskatchewan Power Corporation will install the generating facilities at the Coteau Creek site. First power is expected by September 1968, when one of the three 56,000-kw. units goes into service. The other two units of the

same size will be commissioned in October and December, 1968.

Two 150,000-kw. steam turbines are scheduled for installation at the Boundary Dam thermal station at Estevan. These units, scheduled for commissioning in 1969 and 1970 respectively, will be fired by lignite coal from the Estevan coal fields and will raise the station's total installed capacity to 432,000 kw. in four units.

During 1967, transmission lines completed or under construction totalled 201 miles. A 138-kv. line, 121 miles long, linking Boundary Dam to Tantallon, can be converted to 230-kv. operation; another 138-kv. line, 9.7 miles long, extends from Wolverine to Guernsey; the remaining lines under construction during the year operate at 72 kv.

Two new transformer substations, one at Elstow and the other at Hart, led to a total capacity increase of 6,000 kva.

ELDORADO MINING AND REFINING COMPANY LIMITED

A 66-kv. transmission line terminating at Eldorado was extended seven miles to the northeast to a new satellite mine known as HAB.

Manitoba

Manitoba's electric generating capacity increased by 23,300 kw. of thermal capacity in 1967. Scheduled for installation in 1968 is 109,250 kw. of hydro capacity. A total of 1,252,950 kw. of hydro capacity and 105,000 kw. of thermal capacity is scheduled for installation after 1968.

MANITOBA HYDRO

Manitoba Hydro is installing the fourth and final unit at Grand Rapids hydro station on the Saskatchewan River. This unit will have a capacity of 109,250 kw. and is scheduled for completion in 1968. Facilities terminating the supply of the 230-kv., Grand Rapids-Soab Lake transmission line were installed in 1967. Additional facilities, necessitated by the construction of the Grand Rapids fourth unit and the Grand Rapids-Dauphin-Vermilion 230-kv. transmission line, remained under construction at year's end. Also under construction is an additional transmission circuit from Grand Rapids to the southern system. From Grand Rapids, the line is being routed west to Overflowing River and then southward through Minitonas to the Dauphin-Vermilion terminal station, a total distance of 246 miles.

Construction of the Kelsey hydro station in the early 1960's was a first step in the development of the Nelson River's considerable power potential. The year 1966 saw the start of a cooperative scheme, involving the Governments of Manitoba and Canada, to advance the development of the Nelson River. The scheme,

known as "Phase One Development of the Nelson River", will comprise four distinct projects.

The first project entails construction of a twelve-unit generating station at Kettle Rapids on the Nelson River near Gillam. The Kettle Rapids plant will house slightly more than 1,200,000 kilowatts of generating capacity, 406,000 kw. of which is expected to be in service by September 1971.

The second and third projects are designed to augment and regulate the natural flow of the Nelson River to increase the potential at power sites on the river. To provide the additional flow, water from the Churchill River will be diverted via the Rat and Burntwood Rivers to enter the Nelson River immediately downstream from the Kelsey plant. Flow regulation will be carried out by controlling the outflow of Lake Winnipeg by means of a dam at Warren Landing.

The fourth project provides for the transmission of power from Nelson River plants to demand centres in southern Manitoba.

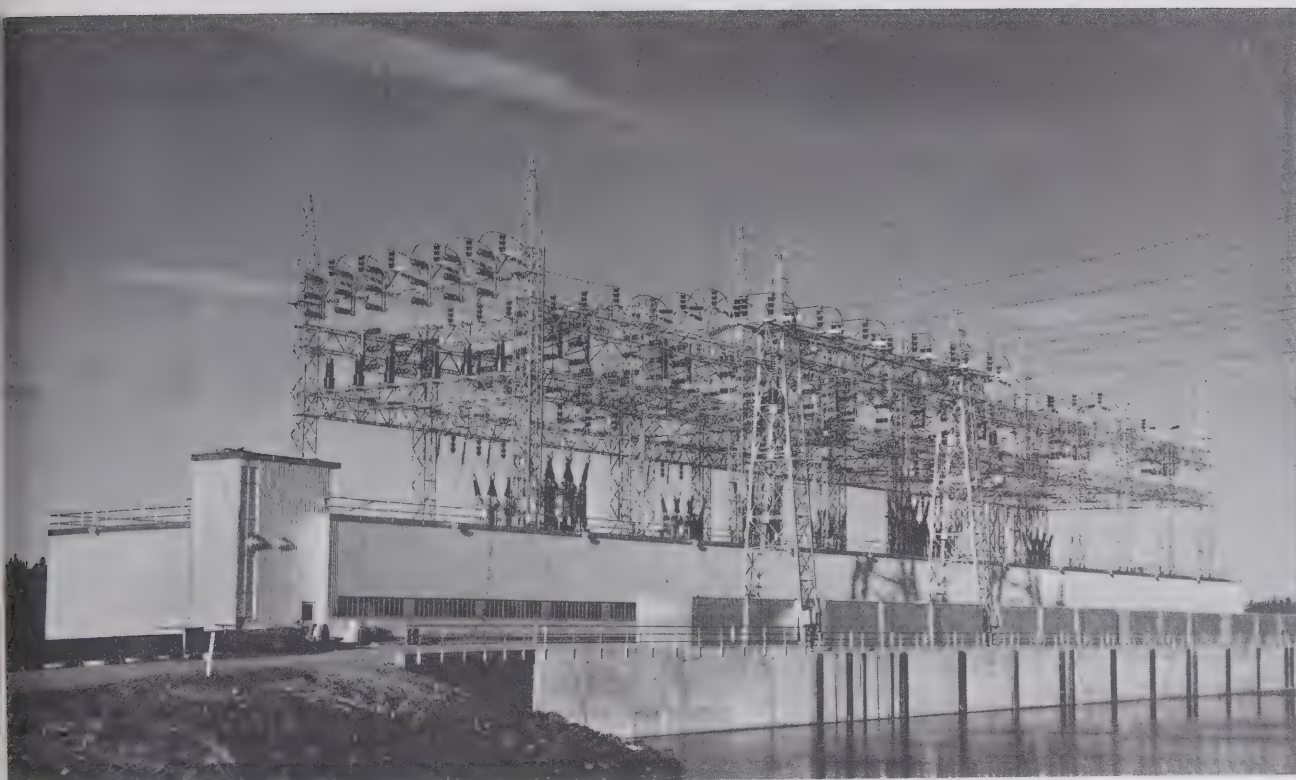
Work during 1967 progressed mainly in the powerhouse area and in the construction of camps and associated services for the Kettle Rapids station.

A 138-kv. 85-mile long transmission line from Kelsey generating station to the Kettle Rapids construction site was placed in service in 1967. Studies had shown it more economic to obtain power from this source than to construct and operate thermal-electric facilities at the site.

Construction of ± 450 -kv. "dc" transmission lines, for the transmission of power from hydro

*Selkirk thermal plant
in Manitoba.*





*Kelsey hydro station on the Nelson River
Manitoba.*

developments on the Nelson River to load centres in southern Manitoba, a distance of about 565 miles, is under way. Available for use in the spring of 1971, two guyed tower lines rated at 1,620,000 kilowatts but with emergency capability to 3,240,000 kw., are being constructed. A terminal station at the generating station will convert the developed "ac" power to "dc" for transmission and a terminal station at a load centre in southern Manitoba will re-convert it to "ac" for distribution. The line and terminals are being financed and constructed, and will be owned by the Government of Canada.

Expansion of mining operations at Thompson prompted Manitoba Hydro to install unit No. 6 at its Kelsey generating station on the Nelson River. This unit, comprising a 42,000-hp. turbine and a 33,750-kw. generator, is scheduled to be in service during 1969, increasing the total plant capacity to 202,500 kw.

To help meet the power demand forecast for the period prior to the date of completion of the Kettle Rapids project, the Brandon thermal station is to be expanded to house a 105,000-kw., lignite-fired, steam generator unit. Installation of this unit, scheduled for November 1970, will bring the total capacity of the Brandon station to 237,000 kw. in five units.

The capacity of the Selkirk thermal

station was expanded in 1967 to include two gas turbine units each rated at 11,200 kw. The revised capacity at Selkirk is 154,400 kw. in four units.

The increased demand for power at Thompson and at associated mining developments necessitated a 230-kv. transmission link with the southern system via Grand Rapids. The northern stage of the line from Thompson to Soab Lake carries Nelson River power to new mining developments being established at Soab Lake and Birchtree. This link, involving 47 miles of 230-kv. transmission line went into operation in 1966. The southern stage from Grand Rapids to Soab Lake, a distance of 161 miles went into operation in 1967.

In accordance with a cost sharing agreement with the Department of Indian Affairs and Northern Development (CANADA), Manitoba Hydro installed diesel electric services consisting of 600 kw. at Island Lake and 150 kw. each, at Nelson House and God's Lake.

Together with the transmission lines previously mentioned, Manitoba Hydro was working on lines totalling more than 700 miles, including 409 miles at 230 kv. Construction of new transformer stations and conversion of existing stations resulted in a net increase of 175,450 kva.

Ontario

Ontario's electric power generating capacity was increased during 1967 by 504,330 kw. of new capacity. Thermal generating capacity accounted for 365,230 kw. and hydro for 139,100 kw. Forecasts for 1968 indicate that 928,300 kw. of thermal capacity and 111,600 kw. of hydro capacity will go into service.

The continuing trend towards thermal installation in Ontario is evident in the installation schedule for after 1968 which includes 6,160,000 kw. of thermal capacity compared to the 681,300 kw. of hydro capacity.

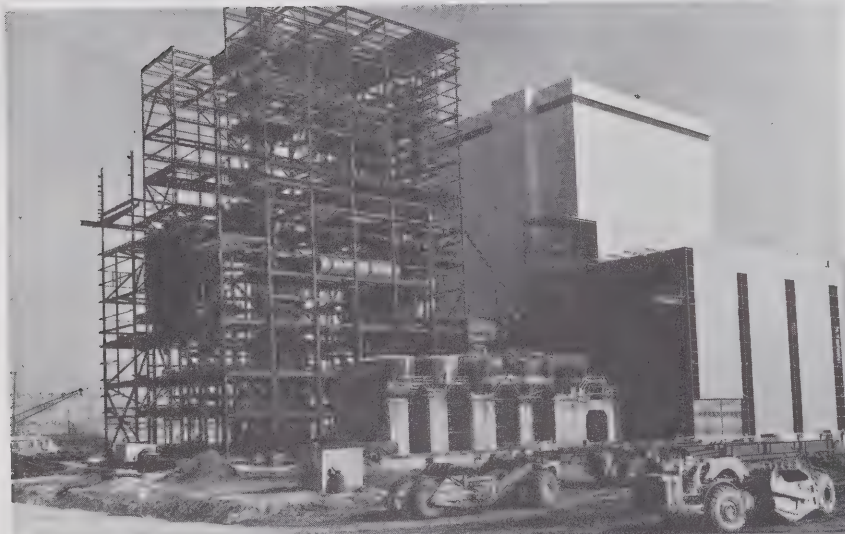
HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO

Ontario Hydro's electric power development program involved construction at six hydro stations in 1967 and construction either was in progress or plans were well advanced for installations at seven conventional thermal

stations and two nuclear-electric plants.

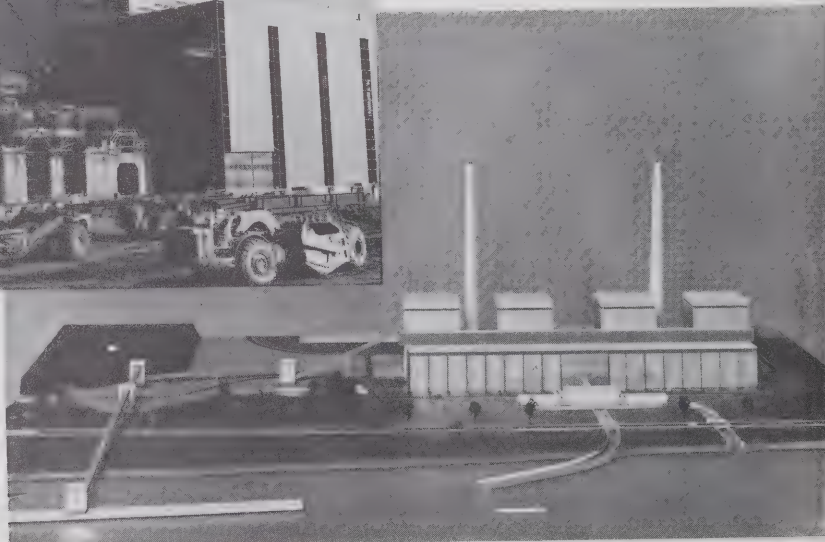
The hydro stations under construction during 1967 were Mountain Chute, Barrett Chute and Stewartville stations on the Madawaska River, Aubrey Falls and Wells stations on the Mississagi River and Lower Notch on the Montreal River. The conventional thermal plants involved in the 1967 program were Lakeview and Richard L. Hearn stations near Toronto, Lambton station near Sarnia, Detweiler station near Kitchener, J. Clarke Keith station at Windsor, Thunder Bay station at Fort William and Nanticoke station in the Niagara Region. The nuclear-electric stations were Pickering station near Toronto and the Douglas Point station on the shore of Lake Huron.

Hydro-Electric Development: Construction at the Mountain Chute hydro development on the Madawaska River was completed in 1967. The station went into service in the fall of 1967 and made available a total generating capacity of 139,400 kw. in two units. The turbines are rated at 112,000 hp. each.



Construction in progress at Lambton thermal station near Sarnia, Ontario.

Scale model of completed Lambton thermal station.



At Barrett Chute, further downstream on the Madawaska River, the present powerhouse is being extended to house two additional units, each with generators rated at 55,800 kw. and turbines at 84,000 hp. Work on the headworks structure for these units was far enough advanced to permit reflooding the intake area. At the end of the year, draft-tube concrete had been poured and erection of the penstocks and scroll cases was proceeding.

Stewartville hydro station on the Madawaska River, downstream from Barrett Chute, is being extended to house two additional units each consisting of a 45,900-kw. generator and 68,000 hp. turbine. The additional units will raise the generating capacity at Stewartville to 153,000 kw. from the present total capacity of 61,200 kw. in three units.

At the Aubrey Falls hydro development, on the Mississagi River, northeast of Sault Ste. Marie, excavation for the main structures is under way. A construction camp and a new townsite to provide family accommodations have been built. These facilities will also serve future development projects on the Mississagi River. The station is designed for an installation of two 65,250 kw. generators driven by turbines each rated at 100,000 hp.; the in-service date is late 1969.

Design work is under way for two additional projects initiated in 1967. Wells generating station on the Mississagi River, and Lower Notch generating station on the Montreal River. The Wells station, located near the George W. Rayner station, is designed to accommodate two 150,000-hp. turbines driving two 107,500-kw. generators. The station is scheduled for service in 1970. Lower Notch station with a total turbine capacity of 340,000 hp. and a corresponding generating capacity of 244,000 kw. in three units, is scheduled for service in 1971.

Hydro developments at Maynard Falls on the English River, at Grand Rapids on the Mattagami River, and on the Little Jackfish River, are under consideration. Also under consideration are proposals for extensions to three existing stations on the Lower Mattagami River.

Thermal-Electric Generating Stations:
The bringing into service of the 200,000-kw. Douglas Point nuclear-electric station and the installation of a larger number of combustion turbine units at widespread locations in the Province represented almost all of the thermal capacity brought into initial operation during 1967.

Work on major thermal projects was seriously affected by strikes in the construction industry.

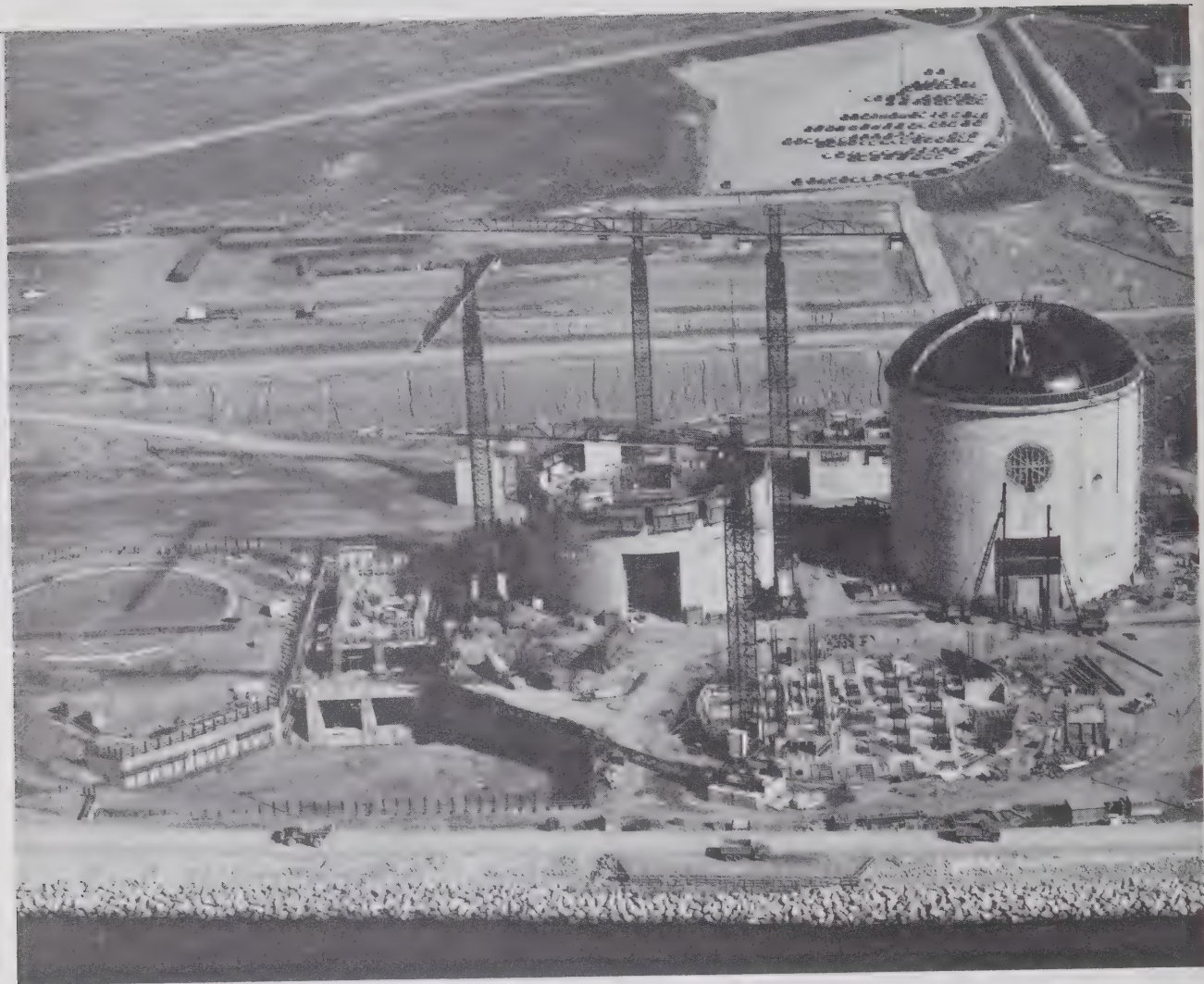
Conventional Thermal Stations: Construction of the last three of eight 300,000-kw. units at the Lakeview generating station near Toronto continued during 1967. However, strikes delayed progress to such an extent as to require extensive postponement of scheduled in-service dates. Previously, two of the three units had been scheduled for completion in 1967 and the third in 1968. As now scheduled, all three units will be brought into service in 1968. Four small combustion turbines with capacities totalling 30,000 kw. were installed at Lakeview as planned, providing additional power for peak loading.

A program is under way for the installation of a number of combustion-turbine generating units with capacities ranging from 7,500 kw. to over 16,000 kw. at a number of existing generating and transformer stations. The units, installed in both the East and West Systems, will supply additional power which may be used either for peak or base-load as operating conditions dictate. At the thermal-electric generating stations, the units will be directly connected to the station-service bus. The quick-starting ability of these units will be used to good advantage for the restoration of station service in the event of a power interruption. During 1967, a total of 162,780 kw. of combustion-turbine capacity was installed at the following stations: Detweiler (Kitchener), 65,280 kw. in four units; Lakeview (Toronto), 30,000 kw. in four units; Richard L. Hearn (Toronto), 30,000 kw. in four units; Lambton (Sarnia), 30,000 kw. in four units; and J. Clarke Keith (Windsor), 7,500 kw. in a single unit. Another 28,300 kw. in two units is scheduled for service in 1968 in the Thunder Bay station at Fort William.

At the Lambton thermal station, fourteen miles east of Sarnia, erection of the boiler, condenser and stacker reclaimer continued during 1967. Initial service of the 500,000-kw. units at Lambton will be in 1969 when the first two units are scheduled for operation; two other units are scheduled for service in 1970 to complete the station.

Site investigations for the Nanticoke coal-fired, thermal-electric generating station, on the north shore of Lake Erie, were completed in 1967. The schedule for the new station calls for the installation of four 500,000-kw. units, with one unit scheduled for service in each year 1971 - 1974.

Nuclear-Electric Generating Stations:
Canada's first full-scale nuclear power station, the 200,000-kw. Douglas Point Nuclear Power Station on the eastern shore of Lake Huron, between Kincardine and Port Elgin, began initial service early in 1967. The 1966 issue of Electric Power in Canada reported incorrectly that the unit began initial service at the end of 1966.



*Pickering nuclear power station
under construction on the shore
of Lake Ontario near Toronto.*

At the Pickering Nuclear Power site, east of Metropolitan Toronto, excavation work at the site and pile driving for the first two units have been completed. Designed for four 540,000-kw. units, the station is being financed jointly by Ontario Hydro and the Governments of Ontario and Canada. It is being built by Ontario Hydro with Atomic Energy of Canada Limited co-operating in the design of components associated with the nuclear reactors. Contracts for most of the equipment for the four units have been awarded. The units are scheduled for service one in each year from 1970 - 1973.

Electric Power Transmission: Conversion during the year of the transmission line between Sudbury and Toronto from 230-kv. to 500-kv. operation, completed the extra-high-voltage transmission link between hydro stations in the James Bay region and Toronto. The total length of the line is 435 miles.

Expansion of the Commission's transformer facilities in 1967 included the installation of new equipment at Kleinburg Transformer Station near Toronto to permit conversion of the southern section of the EHV line to 500-kv. operation. Major additions to the 230-kv. network were under way in Peterborough, Oshawa and at the Vida and Imperial Transformer Stations in Sarnia. The 115-kv. network was bolstered by new capacity at Hamilton and Meaford and at the Duplex and Charles stations in Toronto. Design and construction of new facilities associated with linking the Commission's East and West Systems are continuing. Complete interconnection between the two systems will be realized in 1970.

The Commission's transmission line network was increased to 19,518 circuit miles, following installation in 1967 of 176 circuit miles. Slightly more than half of the new installation in 1967 was 230-kv. line.

Quebec

Quebec's extensive program of development of electric power generating facilities added a further 430,480 kw. of new capacity in 1967, to raise the province's total installed capacity to more than twelve million kilowatts. Hydro accounted for 261,030 kw. of the new capacity and thermal for 169,450 kw. A total of 181,000 kw. of new capacity is scheduled for 1968, 150,000 kw. of which will be thermal.

On the basis of present scheduling, a total of nearly five million kilowatts of new capacity, almost all of it hydro, should come into service during the years 1969 to 1974.

QUEBEC HYDRO-ELECTRIC COMMISSION

Hydro-Electric Projects: One of North America's most spectacular engineering projects, the harnessing of the power potential of the Manicouagan and Outardes Rivers, continued during 1967. The project involves the construction of seven hydro plants on the two rivers and the installation of additional capacity at one existing station. The total generating capacity of the completed Manicouagan-Outardes project will be in excess of five and one-half million kilowatts.

At Manic 2, eleven miles from the mouth of the Manicouagan River, the eighth and final unit was installed, increasing the station's total capacity to 1,015,200 kw. The units consist of 126,900-kw. generators driven by turbines rated at 170,000 hp.

Construction at Manic 1 was brought to an end during the year when the third and final unit was installed to complete the station's 184,410 kw. capacity. The turbines at Manic 1 are each rated at 80,000 hp. and the generators, at 61,470 kw.

Construction of Manic 5, the largest development in the Manicouagan-Outardes hydro complex, continued during 1967, with construction of the buttressed, multi-arch dam being completed. The dam is more than 4,000 feet long and rises 703 feet above bedrock, making it one of the highest and most massive dams of its kind in the world. The penstocks, tunnels, surge tank, powerhouse and other architectural work will be completed by 1970. The first three of a total of eight units, each with a 225,000-hp. turbine and a 165,300-kw. generator, will be installed in 1970, followed by four others in 1971 and the final one in 1972.

Manic 3, scheduled for initial operation in 1972, will be the last of the new Manicouagan developments to come into service. The total generating capacity at Manic 3 will be

1,120,000 kw. in seven units, and the total turbine capacity, 1,505,000 hp. The plant is scheduled for completion by 1974.

Scheduled for completion in 1969 on the Outardes River are Outardes 4 and Outardes 3, each with four units. Outardes 3 with a total generating capacity of 744,800 kw. and a corresponding turbine capacity of 1,034,000 hp. is the larger of the two. Outardes 4 will have a total generating capacity of 632,000 kw. and a total turbine capacity of 864,000 hp. The dam at Outardes 4 will create a reservoir with more than 250 square miles of surface area.

Adjacent to the existing 50,000-kw. Outardes Falls station is the Outardes 2 station which is scheduled for service in 1970. The new station, which is designed for a total generating capacity of 453,900 kw. in three units will have a total turbine capacity of 612,000 hp.

Elsewhere in the province, Quebec Hydro is developing two sites on the Quinze Rapids reach of the upper Ottawa River to help supply the power requirements of the rapidly-developing northwestern region of the province. The sites are Rapides-des-Îles and Premières Chutes.

The Rapides-des-Îles station is designed for four units consisting of 36,630-kw. generators and 50,000-hp. turbines. Two units were installed in 1967 bringing the station capacity to 109,890 kw. in three units. The date of installation of the fourth unit will depend upon the magnitude of future power demands. Rapides-des-Îles will eventually be operated by remote control. Total generating capacity at Premières Chutes will be 124,200 kw. in four units; the total turbine capacity will be 160,000 hp. The first unit is scheduled for installation in 1968 and the second and third units in 1969. The fourth unit has not been scheduled.

At Belle Rivière, a small hydro-electric installation having a total capacity of 600 kw. was removed from service.

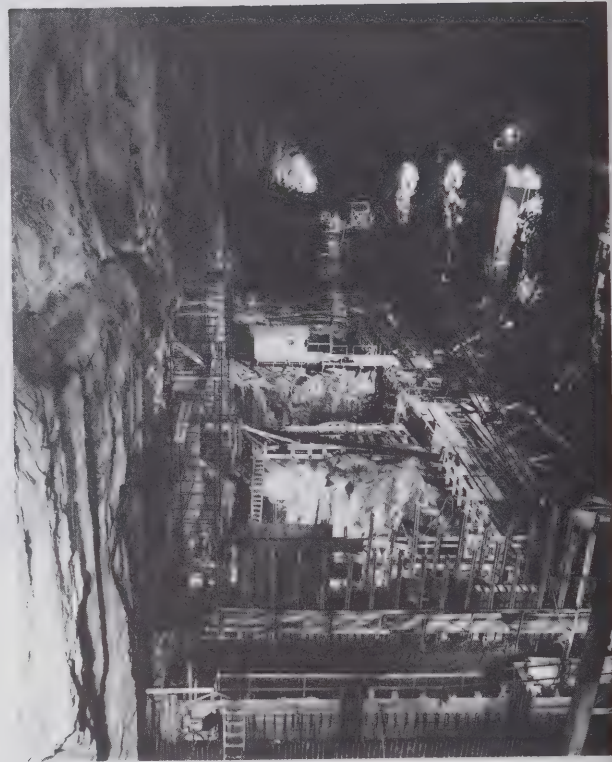
Thermal-Electric Projects: Quebec's enormous water power resources continues to provide almost all the electric energy needed to take care of the province's requirements. However, despite Quebec's almost exclusive dependence upon hydro power, the greater flexibility offered by integrated hydro-thermal operation is leading to a growing interest in the provision of thermal capacity.

In 1967, one 150,000-kw. unit was added at Tracy, about 45 miles from Montreal. The addition of this unit brings Tracy's total installed capacity to 450,000 kw. in three units. The plants ultimate capacity of 600,000 kw. will be realized in 1968 when the fourth 150,000-kw. unit is installed. The Tracy plant will continue

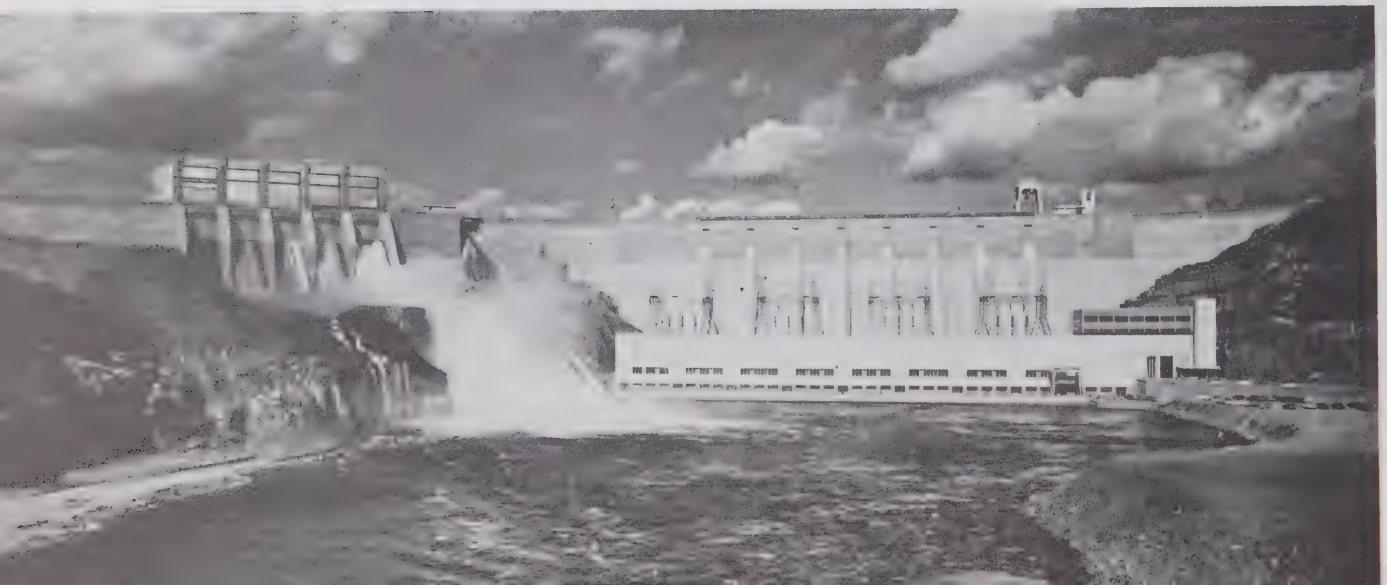


Upper. Earthfilled dam at Outardes 4.

Right. Construction in progress at underground power house at Outardes 3.



Lower. Manicouagan 2 generating station, completed in 1967.



Artist's conception of Gentilly nuclear station in Quebec.



to supply peak power until construction of the the Manicouagan-Outardes hydro stations is completed, at which time it will revert to standby operation.

One new diesel station comprising two 1,000-kw. units was brought into service in 1967 at Havre St. Pierre and a 600 kw. diesel unit was installed at Blanc Sablon, raising the generating capacity at that location to 1,550 kw. Additional small units totalling 1,100 kw. were installed at several other locations.

Nuclear-Electric Projects: Construction of Quebec's first nuclear generating plant began in 1966. The Gentilly plant at Pointe aux Roches on the south shore of the St. Lawrence River is being built by Atomic Energy of Canada Limited in co-operation with Quebec Hydro engineers. Rated at 250,000 kw., Gentilly, like the Douglas Point station in Ontario, is designed to use natural uranium as fuel and heavy water as the moderator which sustains the chain reaction in the fuel. Douglas Point, however, uses heavy water under pressure as the coolant for the moderator core, whereas, boiling light water is used at Gentilly for simplicity in design and construction. On completion in 1971, the plant will be operated by Quebec Hydro who will purchase the plant when it has demonstrated its reliability and its suitability for incorporation into the Quebec Hydro system.

Electric Power Transmission: The considerable distances over which power from the Manicouagan-Outardes stations must be carried and the magnitude of the output from the stations led to the selection of 735 kv. as the line voltage which would provide the most economic transmission. As planned, power from the Manicouagan-Outardes plants will be fed to two collector stations, Micoua and Manicouagan, at 300 kv. From the collector stations, the

power will be transmitted to load centres in the Quebec-Montreal area over three 735-kv. lines.

The first of these 735-kv. lines follows the north shore of the St. Lawrence River from the Manicouagan collector station to the Isle of Orleans, where it crosses the river to Lévis and follows the south shore to the Boucherville substation near Montreal, a total distance of 365 miles. This line went into service in September 1965 when first power from Manic 2 became available. The second line, following this same route, will be completed in 1969.

The third line will be built entirely on the north shore from the Micoua collector station to Montreal, a distance of 375 miles. The first section from Micoua to Québec City will be in service in 1970 and the entire line, in 1971.

MANICOUAGAN POWER COMPANY

The Company has completed the second 161-kv. tie-line, 3.4 miles long, adjacent to the existing line connecting the 161-kv. substation at McCormick Dam with Quebec Hydro's substation at Hauterive.

ASBESTOS CORPORATION LIMITED

The Corporation has temporarily suspended plans to build a thermal-electric plant at Asbestos Hill in the Ungava region. The plant, designed to have a capacity of at least 7,500 kw., was initially expected to be available in 1968.

THE PRICE COMPANY LIMITED

The Company completed construction of a 14,750-kw. thermal plant at its Kenogami Mill site in 1967.

New Brunswick

New Brunswick's total electric generating capacity was increased in 1967 by a net total of 97,500 kw. of thermal capacity and 400 kw. of hydro capacity. Some 300,700 kw. of new hydro capacity will be installed in 1968 followed by another 300,000 kw. over subsequent years. A 100,000 kw. thermal unit is expected to be in service in 1969 in a new plant which ultimately may have a capacity of 500,000 kw.

NEW BRUNSWICK ELECTRIC POWER COMMISSION

Construction of the Commission's Mactaquac hydro development on the Saint John River is proceeding at a rapid pace. The first 100,000-kw. was scheduled to go into service late in 1967, but it was still not operational at year's end. Present plans call for the first three units to be placed in service in 1968. The plant is designed for a total generating capacity of 600,000 kw. in six units, and a total turbine capacity of 840,000 hp. Units 4, 5 and 6 should be in operation by 1976.

Mactaquac, or Big Branch, was the name given by the Maliseet Indians to a stream which joins the Saint John River at the site of the new development about 14 miles above Fredericton. The dam at Mactaquac creates a lake about 59 miles long, the largest in New Brunswick. The

project will provide new water-oriented activities not previously available.

A 400-kw. unit was installed in 1967 at the Milltown hydro development on the St. Croix River. This unit boosts the installed capacity at Milltown to 3,436 kw. in six units. A 700-kw. unit is scheduled for installation at this site in 1968.

The Commission's Courtenay Bay steam plant at East Saint John was increased to a capacity of 263,365 kw. in four units with the installation of a 100,000-kw. unit in 1967. Electric power and process steam for Rothesay Paper Corporation are provided by the Courtenay Bay plant.

A 100,000-kw. unit in a new thermal plant near Dalhousie on Chaleur Bay is now under construction, with operation to commence in September 1969. Ultimately, the plant capacity will rise to 500,000 kw.

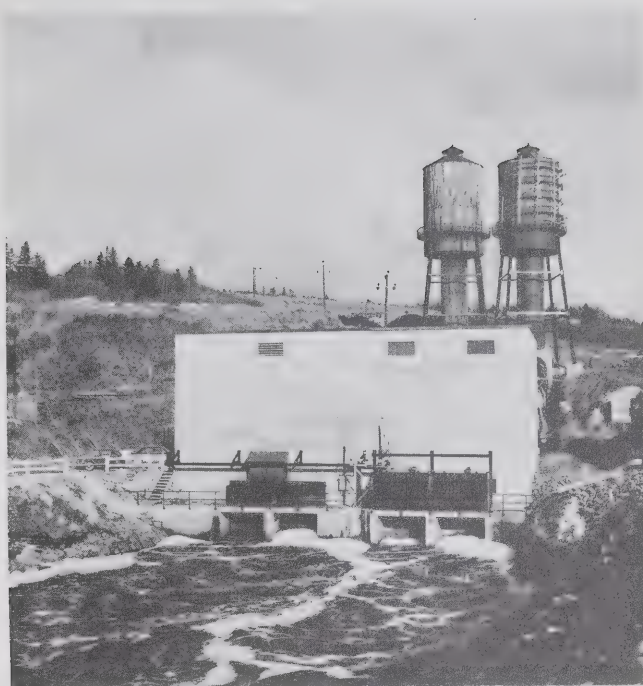
A 2,500-kw. steam unit at Grand Lake No. 1 plant was removed from service in 1967, lowering the total generating capacity to 13,750 kw. in two units.

Approximately half of a 130-mile transmission line between Mactaquac and Bathurst was completed in 1967. The line will initially be operated at 138 kv. with ultimate operation at 230 kv.

Construction of spillway structure at the Mactaquac hydro development in New Brunswick.



Weymouth Falls hydro station showing extension completed in 1967.



Nova Scotia

Increase in industrial expansion, including a heavy water plant on Cape Breton Island, and a new pulp mill has resulted in a significant load growth during the year.

In 1967, a total of 27,750 kw. of new capacity was commissioned in the province, 9,000 kw. in hydro stations and 18,750 kw. in thermal stations. Hydro capacity totalling 11,200 kw. is scheduled for service in 1968 while a total of 230,000 kw. of thermal capacity is under construction for initial operation in 1969.

A study of the feasibility of harnessing the Bay of Fundy tides for hydro-electric power is presently under way.

NOVA SCOTIA LIGHT AND POWER COMPANY LIMITED

Construction of the Company's hydro-electric plant on the Allain River near Lequille is scheduled to be completed in 1968. The plant will house one unit consisting of a turbine rated at 15,000 hp. and a 11,200 kw. generator. This installation will have an exterior similar in design to Canada's first grist mill which was built on the site in 1606 by Pautrin court.

Extensions to the Company's transmission lines during 1967 amounted to 9 miles of 138 kv. double circuit.

NOVA SCOTIA POWER COMMISSION

The Commission's addition to the Weymouth Falls hydro plant on the Sissiboo River was completed in 1967. The new unit, consisting of a 9,000-kw. generator and a 12,000-hp. turbine brings the total installed capacity to 18,000 kw. in two units.

Additional thermal units being installed at the Trenton and Point Tupper thermal plants have capacities of 150,000 kw. and 80,000 kw. respectively. Installation of both plants is expected to be completed in 1969. The Point Tupper plant will supply both the electrical and the steam requirements of the Canadian General Electric heavy water plant being constructed nearby.

During 1967 the Commission's transmission network was extended by 108.6 miles of 69-kv. line; still under construction at the end of the year was another 84.9 miles of 69-kv. line.

New transformer capacity totalling 459 kva at 16 substations was under construction during 1967.

SCOTT MARITIME PULP LIMITED

The Company commenced pulp mill operations in November 1967 at its Abercrombie Point plant. In this connection, a single unit, 18,750-kw. thermal-electric plant was brought into service.

Newfoundland

Newfoundland's total generating capacity was boosted in 1967 by a net total of 208,625 kw., based on an increase in hydro capacity of 229,500 kw. and a net decrease in thermal capacity of 20,875 kw. Hydro capacity totalling 76,500 kw. is scheduled to be placed in service in 1968 while another 5,499,800 kw. of hydro capacity is scheduled for service in following years.

NEWFOUNDLAND AND LABRADOR POWER COMMISSION

The completion of the first phase of the Bay d'Espoir hydro development on the Salmon River added three units with a total generating capacity of 229,500 kw. and a total turbine capacity of 300,000 hp. to Newfoundland's total capacity for 1967. This power will help to meet a growing demand in the pulp and paper and chemical industries. The second stage of development, dealing with construction of diversion dams and canals for the White Bear, Grey Lloyds and Victoria River watersheds, has commenced and will ultimately make it possible to increase the initial generating capacity at Bay d'Espoir to 459,000 kw. and the turbine capacity to 600,000 hp.

Small diesel units varying in size from 25 kw. to 500 kw. were installed at twenty-five locations. Another 2,200 kw. in two units was commissioned at a new plant at Happy Valley to augment the 750 kw. in an older plant.

Transmission lines installed during 1967 in connection with the Bay d'Espoir development included 262 miles at 230 kv. and 236 miles at 138 kv. Another 220 miles of line varying from 66 kv. to 138 kv. remained under construction. The Commission's program of hydro development includes the installation of an island-wide transmission grid consisting of 230-kv. main line with 138-kv. extensions.

One of the three Dams regulating flows for the Bay D'Espoir hydro development.



CHURCHILL FALLS POWER CORPORATION

The Churchill Falls hydro station on the Churchill River in Labrador is destined to rank as one of the world's largest hydro developments. The head which exceeds 1,000 feet and a controlled discharge at the power plant of 49,000 cubic feet per second will allow for continuous power generation in excess of four million kilowatts. Some 5.25 million kilowatts in eleven generating units is proposed for installation.

Excavation of the tunnels to the underground powerhouse began in 1967. Plans call for power from the first units to be available in 1972. Installation of other units will depend on load buildup.

Transmission from Churchill Falls to the Quebec boundary will be at 735 kv. Most of the plants output is expected to be purchased by Quebec Hydro.

TWIN FALLS POWER CORPORATION

The Corporation proposes to install a fifth and final unit at its Twin Falls hydro station. The unit consisting of a 60,000-hp. turbine driving a 46,800-kw. generator increases the plant's total generating capacity to 234,000 kw.

BOWATER POWER COMPANY LIMITED

A 25,000-kw. gas turbine unit installed at Corner Brook during 1966 to accommodate power demands prior to delivery of power from the Bay d'Espoir development was removed from service during the year.

Prince Edward Island

No new generating capacity has been installed in the Province since 1963 with the result that the growing demand for power is expected to exceed the supply by 1970. The need for additional energy could have been met by a two-cable transmission line from New Brunswick, proposed to be placed as part of the Northumberland Strait Causeway. Fearing that the cable would not be available in time, however, the Maritime Electric Company began in 1966 the installation of an additional 20,000-kw. thermal unit at its Charlottetown steam plant. When completed in 1968, the new unit will increase the plant's capacity to 70,500 kw. in seven units.

Yukon and Northwest Territories

During 1967, electric generating capacity in the Territories underwent a net increase of 4,225 kw. of thermal capacity following the installation of 6,370 kw. and removal from service of 2,140 kw. There was no increase in hydro capacity.

In 1968, a total 2,200 kw. of thermal capacity is scheduled for initial service. Over subsequent years, 8,000 kw. of hydro capacity

and some 18,100 kw. of thermal capacity are proposed for installation.

NORTHERN CANADA POWER COMMISSION

In the Northwest Territories, generating capacity at the Commission's Inuvik thermal station was increased with the installation of a 1,000-kw. unit that had been removed from Fort Smith. Several small units totalling 1,305 kw. also were installed at various other locations. Another 1,450 kw. is planned for installation in 1968 and some 9,100 kw. in the years following 1968.

In the Yukon Territory, the Commission has awarded a contract for installation of an 8,000-kw. unit at its Whitehorse Rapids hydro station. The unit is scheduled for service in mid 1969 and will raise the total generating capacity to 19,390 kw. in three units. The new hydro capacity will not meet all of the foreseeable power demands in the region and the Commission is proposing to install a 9,000-kw. thermal plant to supplement the available hydro power. At Dawson City, the Commission is installing a 750-kw. plant for service in 1968.

YUKON ELECTRICAL COMPANY LIMITED

The Company installed small internal combustion units totalling 2,760 kw. and removed several units totalling 790 kw.; the plants involved are at Whitehorse, Watson Lake, Ross River, Teslin, Swift River and Old Crow.

TABULAR SUMMARY - HYDRO

Saskatchewan

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Manitoba

MANITOBA HYDRO											
Grand Rapids	Saskatchewan		450,000	327,750	1	150,000	109,250				
Kettle Rapids	Nelson							12	1,680,000	1,219,200	Initially 406,400 kw. scheduled for installation by 1971.
Kelsey	Nelson		210,000	168,750				1	42,000	33,750	
TOTAL						150,000	109,250		1,722,000	1,252,950	

Ontario

ONTARIO HYDRO													
Mountain Chute	Madawaska	2	224,000	139,400	229,400	139,400							
Barrett Chute	Madawaska				56,000	40,800	2	168,000	111,600				
Wells	Mississagi									2	300,000	215,000	Both units scheduled for service in 1970.
Stewartville	Madawaska				84,000	61,200				2	136,000	91,800	Both of the new units are scheduled for service in 1969.
Lower Notch	Montreal									3	340,000	244,000	All three units scheduled for service in 1971.
Aubrey Falls	Mississagi									2	200,000	130,500	Both units scheduled for service in 1969.
Hanover	Saugeen												Plant containing two 150-kw. units removed from service.
TOTAL			224,000	139,400	(new capacity)			168,000	111,600		976,000	681,300	
			-	350	(removed from service)								
			223,650	139,100	(net increase)								

HYDRO-ELECTRIC CAPACITY

[illegible]

Québec

QUEBEC HYDRO

[illegible]

New Brunswick

NEW BRUNSWICK ELECTRIC POWER COMMISSION																			
Milltown	St. Croix	1	500	400	4,708	3,436	1	900	700										
Mactaquac	Saint John						3	420,000	300,000	3	420,000	300,000							
TOTAL			500	400				420,900	300,700		420,000	300,000							

Nova Scotia

NOVA SCOTIA POWER COMMISSION																			
Weymouth Falls	Sissiboo	1	12,000	9,000	24,000	18,000													
NOVA SCOTIA LIGHT AND POWER COMPANY LIMITED																			
Lequille	Allain					1	15,000	11,200											
TOTAL			12,000	9,000			15,000	11,200											

Newfoundland

NEWFOUNDLAND AND LABRADOR POWER COMMISSION																			
Bay d'Espoir	Salmon	3	300,000	229,500	300,000	229,500	1	100,000	76,500	2	200,000	153,000							
TWIN FALLS POWER COMPANY LIMITED																			
Twin Falls	Unknown				240,000	187,200				1	60,000	46,800							
CHURCHILL FALLS POWER CORPORATION LTD.																			
Churchill Falls	Churchill									11	7,000,000	5,250,000	First power scheduled for delivery in 1972.						
TOTAL			300,000	229,500				100,000	76,500		7,260,000	5,449,800							
NET TOTAL FOR Canada			1,314,700	915,850				2,112,900	1,516,450		18,544,000	13,683,780							

TABULAR SUMMARY - THERMAL

DEVELOPMENT	Type	THERMAL - ELECTRIC CAPACITY							REMARKS
		INSTALLED DURING 1967		TOTAL STATION CAPACITY AT END 1967 kw.	PROPOSED FOR INSTALLATION			Total Capacity kw.	
		No. of Units	Total Capacity kw.		IN 1968				
					No. of Units	Total Capacity kw.			
British Columbia									
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY									
Burrard	S	1	150,000	600,000	1	150,000			
Dry Dock (Prince Rupert)	IC	1	6,000	12,400					
Chetwynd	IC	1	6,000	21,000					
Port Hardy	IC			2,700	1	500			
Columbia Valley	IC				2	3,000			
MacMILLAN, BLOEDEL LIMITED									
Powell River	S	1	36,000	50,925					
NORTHWOOD PULP LIMITED									
Prince George	S	1	1,500	1,500				2	15,000
GRANDUC OPERATING COMPANY									
Tide Lake									
CARIBOO GOLD QUARTZ MINING COMPANY									
Wells									Plant with capacity of 1,875 kw. removed from service.
TOTAL			199,500	(new capacity)		153,500		15,000	
			1,875	(removed from service)					
			197,625	(net increase)					

Northwest Territories

NORTHLAND UTILITIES									
Hay River	IC	3	1,050	2,750					One 275-kw. unit removed from service.
Fort Providence	IC	2	180	255					One 75-kw. unit removed from service.

NORTHERN CANADA POWER COMMISSION									
Inuvik	IC	1	1,000	4,460	8	1,450	3	1,100	One 1,000-kw. unit removed from service.
Various Locations	IC	6	1,305					5,000	
Yellowknife	IC							3,000	
Frobisher Bay	IC								
Fort Smith	IC			2,232					
TOTAL			3,535	(new capacity)		1,450		9,100	
			1,350	(removed from service)					
			2,185	(net increase)					

Yukon

THE YUKON ELECTRICAL COMPANY		IC	12	2,760	-				Six units totalling 790 kw. removed from service.
Various Locations									
NORTHERN CANADA POWER COMMISSION									
Dawson City		IC			750	3	750		9,000
Whitehorse		IC							
TOTAL				2,760	(new capacity)		750		9,000
				790	(removed from service)				
				1,970	(net increase)				

Alberta

CALGARY POWER LTD.									
Wabamun	S	1	300,000	582,000	1			300,000	Scheduled for operation in 1971. Plant containing 1,800 kw. removed from service.
Sundance (nr. Wabamun)	S								
Athabasca									
GREAT CANADIAN OIL SANDS LTD.									
Fort McMurray	S	1	30,500	61,000					
CANADIAN SUGAR FACTORIES									
Taber	S	1	4,300	7,975					

DEVELOPMENT	Type	THERMAL - ELECTRIC CAPACITY							REMARKS	
		INSTALLED DURING 1967		TOTAL STATION CAPACITY AT END 1967 kw.	PROPOSED FOR INSTALLATION					
					IN 1968		AFTER 1968			
		No. of Units	Total Capacity kw.	No. of Units	Total Capacity kw.	No. of Units	Total Capacity kw.			
ALBERTA (Cont'd)										
CANADIAN UTILITIES LIMITED	IC	800	66,000			1	150,000		Capacities totalling 420 kw. removed from service. Scheduled for operation in 1969.	
Various Locations										
Battle River (Forestburg)										
B.A. OIL COMPANY LIMITED	IC	600								
Morin Gas Plant										
ALBERTA DEPARTMENT OF PUBLIC WORKS	IC	500							Units totalling 130 kw. removed from service.	
Calgary										
NORTHLAND UTILITIES LIMITED	IC	3,175							Capacities totalling 3,920 kw. removed from service.	
Various Locations										
CITY OF EDMONTON	S					2	330,000			
Edmonton										
TOTAL		339,955	(new capacity)				780,000			
		6,270	(removed from service)							
		333,685	(net increase)							

Saskatchewan

SASKATCHEWAN POWER CORPORATION								
Success	GT	3	35,520	35,520			2	300,000
Boundary Dam (Estevan)	S			132,000				One unit scheduled for operation in 1969, the second in 1970.
TOTAL			35,520					300,000

Manitoba

MANITOBA HYDRO									
Selkirk	S	2	22,400	154,400				1	105,000
Brandon	S			132,000					
Various Locations	IC	10	900						Installed under a cost sharing agreement with the Department of Indian Affairs and Northern Development.
TOTAL			23,300						105,000

Ontario

ONTARIO HYDRO										
Douglas Point (between Kincardine & Port Elgin)	N	1	200,000	200,000						
Detweiler (Kitchener)	CT	4	65,280	65,280						
Lakeview (Toronto)	S & CT	4	30,000	1,530,000	3	900,000				
R. L. Hearn (Toronto)	S & CT	4	30,000	1,230,000						
Lambton (Sarnia)	S & CT	4	30,000	30,000				4	2,000,000	Two units scheduled for service in 1969; the remaining two in 1970.
J. Clark Keith (Windsor)	S & CT	1	7,500	271,500						
Nanticoke (Niagara)	S							4	2,000,000	One unit scheduled for service in each year 1971-74.
Pickering	N							4	2,160,000	One unit scheduled for service in each year 1970-73.
Thunder Bay	S & CT			100,000	2	28,300				
GANANOQUE ELECTRIC LIGHT AND WATER SUPPLY										
Station No. 6	IC	2	2,450	5,170						
TOTAL			365,230			928,300			6,160,000	

DEVELOPMENT	Type	THERMAL - ELECTRIC CAPACITY							REMARKS
		INSTALLED DURING 1967		TOTAL STATION CAPACITY AT END 1967 kw.	PROPOSED FOR INSTALLATION				
		No. Units	Total Capacity kw.		IN 1968		AFTER 1968		
					No. Units	Total Capacity kw.		No. Units	
Quebec									
QUEBEC HYDRO									
Tracy (Sorel)	S	1	150,000	450,000	1	150,000			
Havre St. Pierre	IC	2	2,000	2,000					
Blanc Sablon	IC	1	600	1,550					
Gentilly	N						1	250,000	Scheduled for service in 1971.
Various Locations	IC		1,100						Installed in small diesel stations.
PRICE COMPANY LIMITED									
Kenogami Mill	S	1	14,750	14,750					
IRON ORE COMPANY OF CANADA									
Schefferville	GT	1	1,000	1,000					
ASESTOS CORPORATION LIMITED									
Asbestos Hill (Ungava)	IC						5	7,500	
TOTAL			169,450			150,000		257,500	

New Brunswick

NEW BRUNSWICK ELECTRIC POWER COMMISSION								
Courtenay Bay (East Saint John)	S	1	100,000	263,365				
Dalhousie	S						5	500,000
Grand Lake No. 1	S			13,750				First unit scheduled for operation in 1969. One 2,500-kw. unit removed from service.
TOTAL			100,000	(new capacity)			5	500,000
			2,500	(removed from service)				
			97,500	(net increase)				

Nova Scotia

SCOTT MARITIMES PULP LIMITED		S	1	18,750	18,750							
Abercrombie Point												
NOVA SCOTIA POWER COMMISSION		S		60,000								Scheduled for service in 1969.
Trenton												
Point Tupper												
TOTAL				18,750							230,000	

Newfoundland

BOWATER POWER COMPANY LIMITED		GT									One 25,000-kw. unit removed from service.
Corner Brook											
NEWFOUNDLAND AND LABRADOR POWER COMMISSION		IC	2	2,200 1,925		2	60				Small thermal units at 25 locations.
Happy Valley											
Various Locations											
TOTAL				4,125	(new capacity)		60				
				25,000	(removed from service)						
				-20,875	(net decrease)						

Prince Edward Island

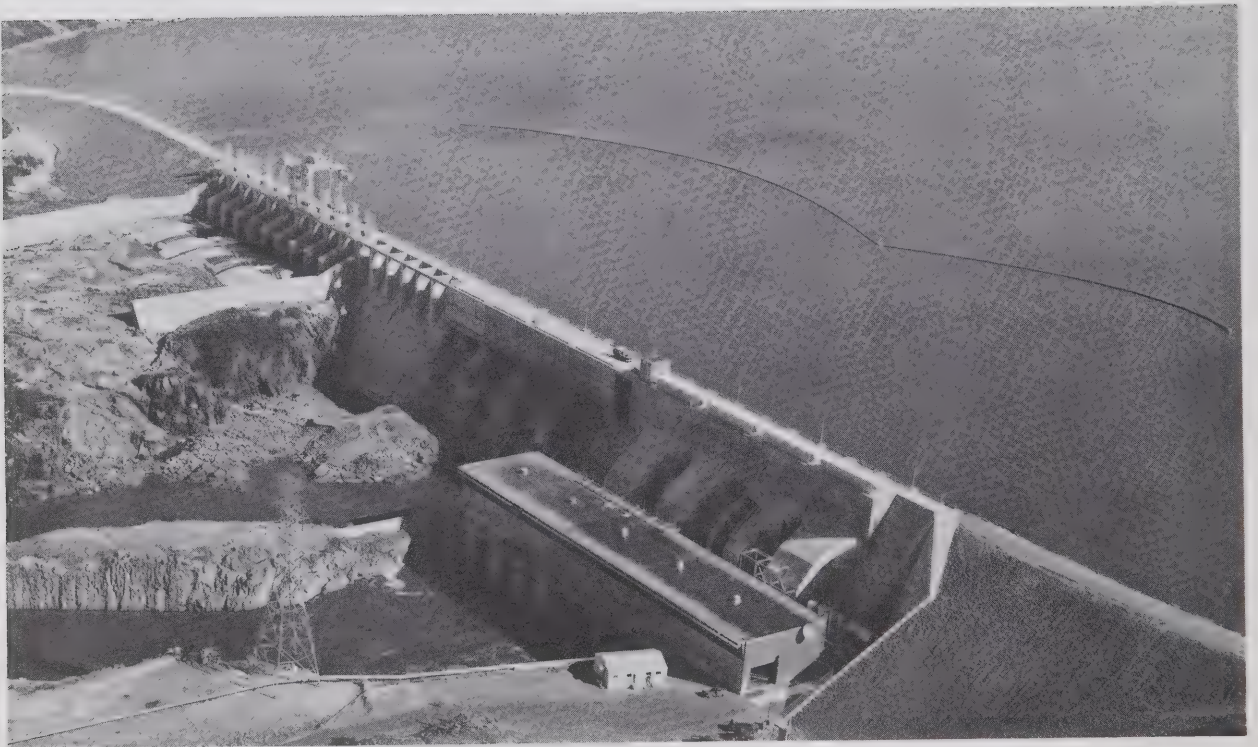
MARITIME ELECTRIC COMPANY		S		50,000	1	20,000				
Charlottetown										
TOTAL						20,000				

NET TOTAL FOR Canada

				1,224,340		1,254,060		8,365,600				
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S - Steam, IC - Internal Combustion, GT - Gas Turbine, N - Nuclear, CT - Combustion Turbine

ELECTRIC POWER GENERATING STATIONS



*Otter Rapids hydro station
on the Abitibi River in
Ontario.*

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

British Columbia

1	Kemano	Nechako to Kemano	ALCAN	1954	1967	2,500	4	150,000		97,600	
							4	150,000	1,200,000	105,600	812,800
2	Waneta	Pend d'Oreille	CMSC	1954	1966	210	1	130,000		72,000	
							2	120,000		72,000	
							1	130,000	500,000	76,500	292,500
3	Bridge River No. 2	Bridge River	BCHPA	1959	1960	1,264	4	82,000	328,000	62,000	248,000
4	Bridge River No. 1	Bridge River	BCHPA	1948	1954	1,261	4	69,000	276,000	45,000	180,000
5	Cheakamus	Cheakamus	BCHPA	1957	1957	954	2	95,000	190,000	70,000	140,000
6	John Hart	Campbell	BCHPA	1947	1953	390	6	28,000	168,000	20,000	120,000
7	Ruskin	Stave	BCHPA	1930	1950	123	3	47,000	141,000	35,200	105,600
8	Brilliant	Kootenay	CMSC	1944	1949	90	3	37,000	111,000	27,200	81,600
9	Wahleach	Wahleach Lake to Fraser	BCHPA	1952	-	1,880	1	82,000	82,000	60,000	60,000
10	Upper Bonnington	Kootenay	CMSC	1907	1940	70	2	8,000		5,062	
							2	9,000		6,750	
							2	26,000	86,000	15,750	55,124
11	Ladore Falls	Campbell	BCHPA	1956	1957	122	2	35,000	70,000	27,000	54,000
12	Stave Falls	Stave	BCHPA	1912	1925	110	4	13,000		10,500	
						113	1	15,000	67,000	10,500	52,500
13	Lake Buntzen No. 1	Lake Buntzen to Burrard Inlet	BCHPA	1951	-	380	1	70,000	70,000	50,000	50,000
14	South Slocan	Kootenay	CMSC	1928	1929	70	3	25,000	75,000	15,750	47,250
15	Lower Bonnington	Kootenay	WKPL	1925	1926	70	3	20,000	60,000	15,750	47,250
16	Seton	Seton Creek	BCHPA	1956	-	147	1	58,500	58,500	42,000	42,000
17	Corra Linn	Kootenay	CMSC	1932	1932	53	3	19,000	57,000	13,500	40,500
18	Whatshan	Whatshan	BCHPA	1951	1956	690	3	16,500	49,500	11,250	33,750
19	Strathcona	Campbell	BCHPA	1958	-	140	1	42,000	42,000	33,750	33,750
20	Stillwater	Lois	MBPR	1930	1948	-	2	25,000	50,000	16,200	32,400
21	Clowhom Falls	Clowhom	BCHPA	1958	-	145	1	40,000	40,000	30,000	30,000

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
BRITISH COLUMBIA (Cont'd)											
22	Puntledge	Puntledge	BCHPA	1955	-	340	1	35,000	35,000	27,000	27,000
23	Lake Buntzen No. 2	Lake Buntzen to Burrard Inlet	BCHPA	1913	1919	380	3	13,500	40,500	8,900	26,700
24	Jordan River	Jordan	BCHPA	1911	1931	1,010	2 1 1	5,430 10,125 18,000	38,985	3,200 8,000 12,000	26,400
25	Ash River	Ash	BCHPA	1959	-	735	1	35,000	35,000	25,200	25,200
26	La Joie	Bridge	BCHPA	1957	-	176	1	30,000	30,000	22,000	22,000
27	Powell River	Powell	MBPR	1911	1926	157 147 147	1 1 2	13,500 3,600 3,000	23,100	12,000 3,750 2,800	21,350
28	Ocean Falls	Link	CZC	1917	1932	143	2 2	2,100 6,300	16,800	1,900 4,200	12,200
29	Elko	Elk	BCHPA	1923	1924	190	2	7,500	15,000	6,000	12,000
30	Falls River	Big Falls Creek	BCHPA	1930	1960	248	2	6,000	12,000	4,800	9,600
31	Nelson	Kootenay	CN	1907	1950	60 60 70 70	1 1 1 1	1,670 1,900 3,000 6,750	13,320	750 1,000 2,120 4,800	8,670
32	Alouette	Alouette Lake to Stave Lake	BCHPA	1928	-	125.5	1	12,500	12,500	8,000	8,000
33	Walter Hardman	Cranberry Creek	COR	1960	1965	770	2	5,800	11,600	4,000	8,000
34	Shuswap Falls	Shuswap	BCHPA	1929	1942	72 82	1 1	3,800 4,000	7,800	2,400 2,800	5,200
35	Aberfeldie	Bull	BCHPA	1922	1922	275	2	3,650	7,300	2,500	5,000
36	Beach	Britannia Creek Furry Creek	ACL	1916	1917	1,835 760	1 1	3,750 3,750	7,500	2,000 2,000	4,000
37	Spillimacheen	Spillimacheen	BCHPA	1955	1955	207	2 1	1,200 3,000	5,400	900 2,200	4,000
38	Tennent Creek	Tennent Creek	WM	1966	-	2,050	1	4,500	4,500	3,060	3,060
39	Woodfibre	Woodfibre Creek	RC	1947	-	920	1	3,650	3,650	2,250	2,250

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

BRITISH COLUMBIA (Cont'd)

40	Port Alice	Victoria Lake to Neroutsos Inlet	RC	1953	-	425	1	3,200	3,200	2,000	2,000
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Total capacity of plants under 1,500 kw. 8,650 5,586

Total capacity of turbines connected directly to mechanical equipment 46,210

Total (all plants) 4,099,015 2,797,240

Yukon Territory

1	Whitehorse Rapids	Yukon	NCPC	1958	1958	61	2	7,500	15,000	5,695	11,390
2	North Fork	Klondike	YCGC	1911	1935	220	1	5,000		3,600	
							1	5,000		2,700	
							1	5,000	15,000	3,750	10,050
3	Mayo River	Mayo	NCPC	1952	1957	110	2	3,000	6,000	2,550	5,100

Total capacity of plants under 1,500 kw. 2,140 1,650

Total capacity of turbines connected directly to mechanical equipment -

Total (all plants) 38,140 28,190

Northwest Territories

1	Twin Gorges	Taltson	NCPC	1965	-	-	1	25,000	25,000	18,000	18,000
2	Snare Falls	Snare	NCPC	1960	-	63	1	9,200	9,200	7,000	7,000
3	Snare Rapids	Snare	NCPC	1948	-	56	1	8,350	8,350	7,000	7,000
4	Bluefish Lake	Yellowknife	CMSC	1941	-	110	1	4,700	4,700	3,360	3,360

Total capacity of plants under 1,500 kw.

Total capacity of turbines connected directly to mechanical equipment -

Total (all plants) 47,250 35,360

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
1	Big Bend	Brazeau	CP	1965	1967	386	1	210,000 250,000	460,000	144,000 161,500	305,500
2	Spray	Spray Diversion	CP	1951	1960	875	2	62,000	124,000	40,400	80,800
3	Rundle	Spray Diversion	CP	1951	1960	318 317	1 1	23,000 40,000	63,000	17,000 29,750	46,750
4	Ghost	Bow	CP	1929	1954	105 92	2 1	18,000 30,000	66,000	12,750 21,150	46,650
5	Cascade	Cascade	CP	1942	1957	320	2	23,000	46,000	17,000	34,000
6	Pumping-Generating	Brazeau	CP	1965	-	-	2	12,850	25,700	9,720	19,940
7	Horseshoe	Bow	CP	1953	1955	72	2 2	4,680 7,500	24,360	3,375 5,625	18,000
8	Kananaskis	Bow	CP	1913	1951	68 70	2 1	6,000 12,000	24,000	3,400 9,560	16,360
9	Bearspaw	Bow	CP	1954	-	48	1	20,750	20,750	15,300	15,300
10	Pocaterra	Kananaskis	CP	1955	-	185	1	18,400	18,400	13,500	13,500
11	Barrier	Kananaskis	CP	1947	-	135	1	13,500	13,500	9,560	9,560
12	Interlakes	Kananaskis	CP	1955	-	98	1	6,900	6,900	5,040	5,040
13	Three Sisters	Spray Diversion	CP	1951	-	50	1	3,600	3,600	3,400	3,400
Total capacity of plants under 1,500 kw.									1,843		1,400
Total capacity of turbines connected directly to mechanical equipment									-		
Total (all plants)									898,053		615,700

Saskatchewan

1	Squaw Rapids	Saskatchewan	SPC	1963	1966	105	6 2	46,000 53,000	382,000	33,500 38,700	278,400
2	Island Falls	Churchill	CRPC	1930	1959	56	3 3 1	16,500 19,000 19,000	125,500	11,880 18,000 17,100	106,740
3	Waterloo Lake	Charlot	EMR	1961	-	63	1	10,000	10,000	7,500	7,500

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

SASKATCHEWAN (Cont'd)

4	Wellington Lake	Charlot	EMR	1939	1960	70	2	3,300	6,600	2,400	4,800
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Total capacity of plants under 1,500 kw. -

Total capacity of turbines connected directly to mechanical equipment -

Total (all plants)

524,100

397,440

Manitoba

1	Grand Rapids	Saskatchewan	MH	1965	1965	-	3	150,000	450,000	109,250	327,750
2	Kelsey	Nelson	MH	1960	1961	50	5	42,000	210,000	33,750	168,750
3	Seven Sisters	Winnipeg	MH	1931	1952	66	6	33,330	200,000	25,000	150,000
4	Great Falls	Winnipeg	MH	1923	1928	58	6	31,000	186,000	22,000	132,000
5	Pine Falls	Winnipeg	MH	1951	1952	37	6	19,000	114,000	13,950	83,700
6	Slave Falls	Winnipeg	WH	1931	1948	30	8	12,000	96,000	9,000	72,000
7	Pointe du Bois	Winnipeg	WH	1911	1925	45	5	5,200		3,000	
							3	6,800		4,000	
							3	6,900		5,200	
							3	7,300		5,200	
							2	8,000	105,000	5,200	68,600
8	McArthur Falls	Winnipeg	MH	1954	1955	23	8	10,000	80,000	7,650	61,200
9	Laurie River No. 2	Laurie	SGM	1958	-	55	1	7,000	7,000	5,400	5,400
10	Laurie River No. 1	Laurie	SGM	1950	1952	55	2	3,500	7,000	2,475	4,950

Total capacity of plants under 1,500 kw. -

Total capacity of turbines connected directly to mechanical equipment -

Total (all plants)

1,455,000

1,074,350

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
1	Sir Adam Beck-Niagara: Generating Station No. 1	Niagara	HEPCO	1922	1930	305 294	5 2 1 2	55,000 58,000 58,000 58,000	565,000	36,000 43,200 44,000 46,750	403,900
	Generating Station No. 2			1954	1958	292	16	105,000	1,680,000	76,475	1,223,600
	Pumping-Generating Station			1957	1958	85	6	46,000	276,000	29,450	176,700
2	Robert H. Saunders - St. Lawrence	St. Lawrence	HEPCO	1958	1959	81	16	75,000	1,200,000	57,000	912,000
3	Des Joachims	Ottawa	HEPCO	1950	1951	130	8	62,000	496,000	45,000	360,000
4	Abitibi Canyon	Abitibi	HEPCO	1933	1959	237	3 2	66,000 66,000	330,000	41,225 43,200	210,075
5	Otto Holden	Ottawa	HEPCO	1952	1953	77	4 4	35,000 33,000	272,000	25,650 25,650	205,200
6	Otter Rapids	Abitibi	HEPCO	1961	1963	107	4	60,000	240,000	43,700	174,800
7	Mountain Chute	Madawaska	HEPCO	1967	1967	151	2	112,000	224,000	69,700	139,400
8	Ontario Power	Niagara	HEPCO	1905	1919	-	3 4 7 1	11,700 11,700 13,400 20,000	195,700	7,500 8,770 8,775 13,500	132,505
9	Harmon	Mattagami	HEPCO	1965	1965	101	2	94,000	188,000	64,600	129,200
10	Pine Portage	Nipigon	HEPCO	1950	1954	105	2 2	41,000 45,000	172,000	29,700 34,650	128,700
11	Kipling	Mattagami	HEPCO	1966	1966	102	2	94,000	188,000	62,700	125,400
12	Chenau	Ottawa	HEPCO	1950	1951	40	8	21,000	168,000	15,300	122,400
13	Little Long	Mattagami	HEPCO	1963	1963	90	2	84,000	168,000	60,800	121,600
14	DeCew Falls No. 2	Welland Canal	HEPCO	1943	1947	280	2	75,000	150,000	57,600	115,200
15	Rankine	Niagara	CNPC	1904	1924	133	5 2 3 1	10,000 12,500 10,750 12,000	119,250	7,500 9,375 9,375 10,300	94,675
16	Toronto Power	Niagara	HEPCO	1906	1915	-	7 4	15,000 13,000	157,000	9,000 7,200	91,800
17	Chats Falls	Ottawa	HEPCO	1931	1931	53	4	28,000	112,000	22,325	89,300
18	Caribou Falls	English	HEPCO	1958	1958	58	3	34,000	102,000	25,650	76,950

Ontario

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
19	Cameron Falls	Nipigon	HEPCO	1920	1958	72	2	12,500		9,540	
							4	12,500		8,480	
						73	1	25,000	100,000	19,000	72,000
20	Manitou Falls	English	HEPCO	1956	1958	54	5	18,500	92,500	14,400	72,000
21	Alexander	Nipigon	HEPCO	1930	1958	60	3	18,000		12,750	
						58	2	19,000	92,000	13,500	65,250
22	Whitedog Falls	Winnipeg	HEPCO	1958	1958	50	3	27,000	81,000	21,600	64,800
23	Stewartville	Madawaska	HEPCO	1948	1948	148	3	28,000	84,000	20,400	61,200
24	Smoky Falls	Mattagami	SFPPC	1928	1931	113	4	18,750	75,000	13,200	52,800
25	Silver Falls	Kaministikwia	HEPCO	1959	-	330	1	60,000	60,000	45,000	45,000
26	Geo. W. Rayner	Mississagi	HEPCO	1950	1950	210	2	29,000	58,000	21,150	42,300
27	Barrett Chute	Madawaska	HEPCO	1942	1942	150	2	28,000	56,000	20,400	40,800
28	Upper Falls	Montreal	GLPC	1937	1957	232	2	12,600		9,000	
							1	31,000	56,200	22,500	40,500
29	Aguasabon	Aguasabon	HEPCO	1948	1948	290	2	27,500	55,000	20,250	40,500
30	Red Rock Falls	Mississagi	HEPCO	1960	1961	93	2	26,500	53,000	20,250	40,500
31	Island Falls	Abitibi	APPC	1924	1925	63	4	12,000	48,000	9,600	38,400
32	DeCew Falls No. 1	Welland Canal	HEPCO	1901	1913	-	1	3,000		2,500	
							2	3,000		2,000	
							1	6,000		4,800	
							1	6,000		5,000	
							2	6,000		5,300	
							1	6,000		5,600	
							1	6,000	45,000	5,900	38,400
33	Kakabeka Falls	Kaministikwia	HEPCO	1906	1914	178	3	7,500		5,400	
							1	12,500	35,000	7,970	24,170
34	High Falls	Michipicoten	GLPC	1930	1950	147	2	11,000		6,750	
							1	13,200	35,200	9,675	23,175
35	Big Eddy	Spanish	HCL	1929	1929	90	3	9,400	28,200	7,200	21,600
36	Sault Ste. Marie	St. Mary	GLPC	1918	1931	18.5	24	900		650	
							3	2,400		1,440	
							1	2,200	31,000	1,600	21,520
37	Iroquois Falls	Abitibi Lake & Black River	APPC	1949	1949	43	1	1,800		1,200	
							1	1,800		1,280	
							1	2,200		1,200	
							6	2,200		1,280	
							5	2,400	31,000	2,025	21,485
38	Twin Falls	Abitibi	APPC	1921	1925	57.5	5	6,000	30,000	4,050	20,250
39	Gartshore	Montreal	GLPC	1958	-	112	1	30,300	30,300	20,000	20,000

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
40	Hollingsworth Falls	Michipicoten	GLPC	1959	-	108	1	30,300	30,300	20,000	20,000
41	Ear Falls	English	HEPCO	1930	1948	36	1 1 2	5,000 5,000 7,500	25,000	4,000 3,825 5,400	18,625
42	High Falls	Spanish	HCL	1905	1966	85	4 1	4,000 7,500	23,500	3,000 5,550	17,550
43	Norman	Winnipeg (West Branch)	OMPP	1925	1925	22	5	3,400	17,000	3,300	16,500
44	Lower Falls	Montreal	GLPC	1938	1942	185	2	10,900	21,800	8,100	16,200
45	Hogg	Montreal	GLPC	1965	-	77	1	21,750	21,750	15,000	15,000
46	Espanola	Spanish	KVPC	1906	1946	64 64 64	4 1 1	1,675 10,000 2,350	19,050	1,250 7,500 1,750	14,250
47	Scott Falls	Michipicoten	GLPC	1952	1952	70	2	10,000	20,000	6,800	13,600
48	Fort Frances	Rainy	OMPP	1955	1955	28	8	2,000	16,000	1,600	12,800
49	Welland Canal	Welland Canal	STLSA	1932	1932	160	3	5,000	15,000	4,000	12,000
50	Wawaitin	Mattagami	HEPCO	1912	1918	125	2 2	3,450 4,000	14,900	2,500 3,375	11,750
51	Kenora	Winnipeg	OMPP	1923	1924	22	4 6	1,200 1,200	12,000	1,000 1,250	11,500
52	Heely Falls	Trent	HEPCO	1913	1919	73	2 1	5,600 5,600	16,800	3,750 3,000	10,500
53	McPhail Falls	Michipicoten	GLPC	1954	1954	48	2	7,500	15,000	5,000	10,000
54	Upper Notch	Montreal	HEPCO	1930	1930	48	2	6,500	13,000	4,800	9,600
55	Calm Lake	Seine	OMPP	1928	1928	82	2	6,400	12,800	4,675	9,350
56	Sturgeon Falls	Sturgeon	APPC	1902	1964	40.5	1 1 1 1 1 1	2,500 1,000 1,500 1,500 1,500 1,000	9,000	1,800 1,685 1,350 1,685 1,415 1,415	9,350
57	Eddy	Ottawa	EBEC	1909	1912	38	2 1	4,650 4,650	13,950	3,000 3,300	9,300
58	Crystal Falls	Sturgeon	HEPCO	1921	1921	33	4	2,600	10,400	2,020	8,080
59	Ranney Falls	Trent	HEPCO	1922	1926	-	1 2	1,000 5,000	11,000	720 3,600	7,920
60	Chaudière Falls No. 4	Ottawa	OHEC	1931	1931	38	2	5,400	10,800	3,960	7,920

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
61	Big Eddy	Muskoka	HEPCO	1941	1941	38	2	5,280	10,560	3,825	7,650
62	Ragged Rapids	Muskoka	HEPCO	1938	1938	38	2	5,200	10,400	3,825	7,650
63	Sturgeon Falls	Seine	OMPP	1927	1927	64	2	5,000	10,000	3,825	7,650
64	Matabitchuan	Matabitchuan	HEPCO	1910	1910	305	4	3,300	13,200	1,690	6,760
65	Swift Rapids	Severn	OWLP	1916	1966	47	1	2,120		1,350	
							2	3,500	9,120	2,700	6,750
66	Lower Sturgeon	Mattagami	HEPCO	1923	1923	42	2	4,000	8,000	3,200	6,400
67	Smooth Rock	Mattagami	APPC	1916	1916	45	2	4,500	9,000	3,125	6,250
68	Eugenia	Beaver	HEPCO	1915	1920	550	2	2,250		1,200	
							1	4,000	8,500	2,400	4,800
69	Meyersburg	Trent	HEPCO	1924	1924	32	3	2,200	6,600	1,600	4,800
70	Nairn	Spanish	HCL	1917	1919	30	3	2,600	7,800	1,500	4,500
71	Chaudière Falls No. 2	Ottawa	OHEC	1909	1936	40	3	2,300	6,900	1,462	4,386
72	Peterborough	Otonabee	PHPC	1902	1950	27	1	2,300		1,200	
							1	2,550		1,500	
							1	2,140	6,990	1,400	4,100
73	Coniston	Wanapitei	HEPCO	1905	1915	53	1	1,200		720	
							1	1,600		1,125	
							1	3,500	6,300	2,250	4,095
74	Stinson	Wanapitei	HEPCO	1925	1925	-	2	3,500	7,000	2,000	4,000
75	Calabogie	Madawaska	HEPCO	1917	1917	30	2	3,000	6,000	2,000	4,000
76	Big Chute	Severn	HEPCO	1911	1919	56	3	1,300		900	
							1	2,300	6,200	1,280	3,980
77	South Falls	South Muskoka	HEPCO	1916	1925	107	1	1,000		635	
							2	2,200	5,400	1,600	3,835
78	Wabagishik	Vermilion	HCL	1912	1935	70	1	2,700		1,600	
							1	2,700	5,400	2,140	3,740
79	Minden	Gull	OWLP	1935	1935	66	2	2,600	5,200	1,800	3,600
80	Sandy Falls	Mattagami	HEPCO	1911	1916	32	2	1,200		950	
						34	1	2,500	4,900	1,595	3,495
81	Hagues Reach	Trent	HEPCO	1925	1925	22.5	3	1,600	4,800	1,120	3,360
82	Indian Chute	Montreal	HEPCO	1923	1924	45	2	2,250	4,500	1,620	3,240
83	Sidney	Trent	HEPCO	1911	1911	20	4	1,400	5,600	795	3,180

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
84	Seymour	Trent	HEPCO	1909	1911	23	4	1,100		600	
							1	1,100	5,500	750	3,150
85	Mathias	Muskoka	OWL P	1950	-	43	1	3,770	3,770	2,812	2,812
86	Hound Chute	Montreal	HEPCO	1910	1911	-	4	1,335	5,340	700	2,800
87	Kapuskasing	Kapuskasing	SFPPC	1923	-	30	1	2,500	2,500	2,750	2,750
88	Frankford	Trent	HEPCO	1913	1913	18	4	1,200	4,800	650	2,600
89	Jones Falls	Rideau Canal	GELW	1948	1950	65	1	250		180	
						58	2	1,037		800	
						58	1	1,500	3,824	800	2,580
90	Sills Island	Trent	HEPCO	1926	1926	14	1	1,000		1,275	
							1	1,000	2,000	1,020	2,295
91	McVittie	Wanapitei	HEPCO	1912	1912	42	2	1,800	3,600	1,125	2,250
92	Nassau	Otonabee	CGEC	1902	1926	16	1	1,600		1,500	
							2	700	3,000	360	2,220
93	High Falls	Mississippi	HEPCO	1920	1920	82	3	1,240	3,720	700	2,100
94	Nipissing	South	HEPCO	1909	1909	-	1	1,250		1,000	
							1	1,250	2,500	1,050	2,050
95	Lakefield	Otonabee	HEPCO	1928	-	16	1	3,100	3,100	2,000	2,000
96	Fountain Falls	Montreal	HEPCO	1914	1914	30	2	1,500	3,000	1,000	2,000
97	Rideau Falls	Rideau	DPW	1909	1909	47	2	1,500	3,000	1,000	2,000
98	Crow Bay	Trent Canal	CPUC	1909	1911	-	1	1,470		1,125	
							1	1,000	2,470	850	1,975
99	Auburn	Otonabee	HEPCO	1911	1912	18	3	950	2,850	625	1,875
100	Current River	Current	PAPUC	1902	1906	80	2	450		350	
							1	1,200	2,100	1,100	1,800
101	Eagle	Eagle	DPC	1928	-	37	1	2,000	2,000	1,760	1,760
102	Trethewey Falls	South Muskoka	HEPCO	1929	-	35	1	2,300	2,300	1,600	1,600
Total capacity of plants under 1,500 kw.									31,131		21,949
Total capacity of turbines connected directly to mechanical equipment									27,375		
Total (all plants)									8,816,650		6,338,637

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
Quebec											
1	Beauharnois: Section 1	St. Lawrence	QHEC	1932	1948	80	8 6	53,000 53,000		37,300 40,000	
	Section 2			1950	1953	80	3 3 6	55,000 55,000 56,000		40,000 41,120 40,000	
	Section 3			1959	1961	80	10	73,700	2,145,000	55,250	1,574,260
2	Manic 2	Manicouagan	QHEC	1965	1967	230	8	170,000	1,360,000	126,900	1,015,200
3	Bersimis I	Bersimis	QHEC	1956	1959	785	8	150,000	1,200,000	114,000	912,000
4	Chute des Passes	Peribonka	ALCAN	1959	1960	540	5	200,000	1,000,000	148,500	742,500
5	Shipshaw	Saguenay	ALCAN	1942	1943	208	2 6 2 2	95,000 103,000 101,000 95,000		58,500 60,000 60,000 60,000	717,000
6	Bersimis II	Bersimis	QHEC	1959	1960	380	5	180,000	900,000	131,000	655,000
7	Carillon	Ottawa	QHEC	1962	1964	61	14	60,000	840,000	46,750	654,500
8	Isle Maligne	Saguenay	SAPC	1925	1937	110	12	45,000	540,000	28,000	336,000
9	McCormick Dam	Manigouagan	MP	1951	1965	124	2 3 2	56,200 60,000 80,000		35,625 40,000 56,250	303,750
10	Trenche	St. Maurice	QHEC	1950	1955	160	6	65,000	390,000	47,700	286,200
11	Beaumont	St. Maurice	QHEC	1958	1959	124	6	55,000	330,000	40,500	243,000
12	La Tuque	St. Maurice	QHEC	1940	1955	114	5 1	44,500 49,000		36,000 36,000	216,000
13	Paugan	Gatineau	QHEC	1928	1956	133 132	1 7	47,000 34,000		32,400 24,225	201,975
14	Chute-à-la-Savane	Peribonka	ALCAN	1953	1953	110	5	57,000	285,000	37,450	187,250
15	Chute-du-Diable	Peribonka	ALCAN	1952	1952	110	5	55,000	275,000	37,450	187,250
16	Manic 1	Manicouagan	QHEC	1966	1967	120	3	80,000	240,000	61,470	184,410
17	Rapide Blanc	St. Maurice	QHEC	1934	1955	108	1 5	44,500 40,000		30,600 30,600	183,600
18	Chute à Caron	Saguenay	ALCAN	1931	1934	160	4	75,000	300,000	45,000	180,000
19	Shawinigan No. 2	St. Maurice	QHEC	1911	1929	145	3 3 2	43,000 18,500 18,500		30,000 15,000 14,000	163,000
20	Cedars	St. Lawrence	QHEC	1914	1924	35	18	12,650	227,700	9,000	162,000

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)											
21	Shawinigan No. 3	St. Maurice	QHEC	1948	1949	145	3	65,000	195,000	50,000	150,000
22	Grand'Mère	St. Maurice	QHEC	1915	1930	80	5	22,000		15,725	
							1	22,000		18,000	
							1	24,500		20,000	
						84	2	22,000	200,500	15,725	148,075
23	Chelsea	Gatineau	QHEC	1927	1939	100	5	34,000	170,000	28,800	144,000
24	La Gabelle	St. Maurice	QHEC	1924	1931	60	3	36,000		24,750	
							2	32,000	172,000	24,750	123,750
25	Rapide-des-Îles	Ottawa (Upper)	QHEC	1966	1967	86	3	50,000	150,000	36,630	109,890
26	Farmers Rapids	Gatineau	QHEC	1927	1947	66	3	24,000		20,000	
							2	24,000	120,000	19,125	98,250
27	Masson	Lièvre	MQPC	1933	1933	185	4	34,000	136,000	23,800	95,200
28	Quinze Rapids	Ottawa (Upper)	QHEC	1923	1955	90	2	10,000		8,000	
							2	10,000		10,800	
							2	34,500	109,000	26,000	89,600
29	Chats Falls	Ottawa	OVPC	1932	1932	53	4	29,940	119,760	22,325	89,300
30	High Falls	Lièvre	MQPC	1930	1936	180	1	32,500		21,250	
							3	30,000	122,500	21,250	85,000
31	Rapid VII	Ottawa (Upper)	QHEC	1941	1949	68	4	16,000	64,000	14,250	57,000
32	Bryson	Ottawa	QHEC	1925	1949	60	2	25,700		18,000	
							1	27,000	78,400	20,000	56,000
33	Murdock Willson	Shipshaw	PBC	1957	-	263	1	82,000	82,000	51,000	51,000
34	Jim Gray	Shipshaw	PBC	1953	1953	338	2	35,000	70,000	25,500	51,000
35	Outardes Falls	Outardes	QNSPC	1937	1937	208	2	36,300	72,600	25,000	50,000
36	Fifty Foot Falls	Hart Jaune	HJP	1960	1960	123	3	22,000	66,000	16,150	48,450
37	Rapid II	Ottawa (Upper)	QHEC	1954	1964	67	4	16,000	64,000	12,000	48,000
38	Montreal Island	Prairies	QHEC	1929	1930	26	3	8,800		7,500	
							3	12,000	62,400	7,500	45,000
39	Dufferin Falls	Lièvre	JMC	1958	1959	62	2	25,000	50,000	19,125	38,250
40	Chicoutimi	Chicoutimi	SMPC	1957	-	273	1	42,000	42,000	32,000	32,000
41	Hemming Falls	St. François	QHEC	1925	1925	48	6	5,600	33,600	4,800	28,800
42	Seven Falls	St. Anne (de Beaupré)	QHEC	1916	1916	410	4	6,000	24,000	4,680	18,720
43	Ste. Marguerite	Marguerite	GPC	1954	1954	100	2	12,000	24,000	8,800	17,600
44	Chaudière No. 2	Ottawa	QHEC	1920	1923	32	3	7,500	22,500	5,760	17,280

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)											
45	Kipawa	Gordon Creek	QHEC	1920	1926	200	2 1 1	3,600 8,500 9,350	25,050	2,800 5,760 5,760	17,120
46	St. Narcisse	Batiscan	QHEC	1926	1926	147	2	11,100	22,200	7,500	15,000
47	Drummondville	St. François	QHEC	1910	1925	27	2 2	3,200 6,000	18,400	2,500 4,800	14,600
48	Chutes aux Galets	Shipshaw	PBC	1921	1921	101	2	8,820	17,640	6,800	13,600
49	Chaudière Falls	Ottawa	EBEC	1913	1955	38	3	5,500	16,500	3,750	11,250
50	Chicoutimi	Chicoutimi	PBC	1923	-	72	1	11,000	11,000	9,900	9,900
51	Waltham	Black	PELC	1917	1951	129	1 1 1 2	1,800 2,250 2,500 3,000	12,550	1,250 1,530 1,800 2,250	9,080
52	Buckingham	Lièvre	ERC	1914	1939	30	1 1 3	2,000 2,500 2,000	10,500	1,375 1,836 1,440	7,531
53	Price	Mitis	QHEC	1922	1929	120	1 1	3,700 5,900	9,600	2,400 4,000	6,400
54	Adam Cunningham	Shipshaw	PBC	1953	-	56	1	9,500	9,500	6,375	6,375
55	Arnaud Bridge	Chicoutimi	QHEC	1912	1917	56	1 2	2,500 2,500	7,500	1,700 1,875	5,450
56	Bell Falls	Rouge	QHEC	1915	1920	54	3	2,400	7,200	1,600	4,800
57	Kenogami	Au Sable	PBC	1912	1912	264	2	3,350	6,700	2,345	4,690
58	Grand Mitis No. 2	Mitis	QHEC	1947	-	75	1	6,000	6,000	4,250	4,250
59	Jonquière No. 1	Au Sable	MJ	1907	1924	42	1 47	1,800 4,030	5,830	1,280 2,812	4,092
60	Westbury	St. François	CS	1928	1928	28	2	2,900	5,800	2,000	4,000
61	Chaudière	Chaudière	QHEC	1903	1904	114	2 1	1,400 2,000	4,800	1,000 1,500	3,500
62	Lachute Mills	North	AL	1929	1929	36	3	1,500	4,500	1,080	3,240
63	Windsor Mills	St. François	DPP	1936	1939	19	2 1 1	1,500 800 430	4,230	1,120 600 320	3,160
64	Weedon	St. François	CS	1920	1926	30 29	2 1	1,700 1,700	5,100	1,040 1,040	3,120
65	St. Alban	Ste. Anne de la Pérade	QHEC	1927	-	64	1	4,000	4,000	3,000	3,000

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)											
66	Ogilvie Flour Mills	Lachine Canal	OFM	1940	1948	23 15	2 2	1,600 400	4,000	1,200 300	3,000
67	St. Raphael	Sud	QHEC	1921	1921	232	3	1,500	4,500	850	2,550
68	Domtar	Jacques Cartier	DT	1960	1962	60	2	1,200	2,400	1,200	2,400
69	MacDougall	Jacques Cartier	DP	1925	1927	55	2	1,900	3,800	1,200	2,400
70	Jonquière Mill	Au Sable	PBC	1916	1916	67	1 1	1,800 1,625	3,425	1,200 1,200	2,400
71	Winneway	Winneway (Upper Ottawa)	LMC	1938	1943	54	2	1,400	2,800	1,169	2,338
72	Mont Laurier	Lièvre	QHEC	1937	1951	22	1 2	500 1,325	3,150	500 900	2,300
73	Sherbrooke	Magog	QHEC	1910	1910	55	3	1,333	4,000	752	2,256
74	Garneau	Chicoutimi	QHEC	1925	-	33	1	3,450	3,450	2,240	2,240
75	Magog	Magog	DTC	1920	1920	25	2	1,500	3,000	1,000	2,000
76	Corbeau	Gatineau	QHEC	1926	1926	16	2	1,250	2,500	1,000	2,000
77	Bird's	Jacques Cartier	DP	1937	-	27	1	2,250	2,250	1,920	1,920
78	Rock Forest	Magog	CS	1911	1911	30	2	1,500	3,000	940	1,880
79	Rivière-du-Loup	Du Loup	CRL	1929	1942	100	1 1	960 1,900	2,860	640 1,200	1,840
80	East Angus Mill	St. Francois	DPP	1910	1910	33 33 20	1 1 1	1,090 1,090 252	2,432	846 990 -	1,836
81	Magpie	Magpie	QHEC	1961	1961	31	2	1,500	3,000	900	1,800
82	Rawdon	Ouareau	QHEC	1928	-	46	1	2,300	2,300	1,720	1,720
83	Frontenac	Magog	CS	1917	1917	38	2	1,450	2,900	800	1,600
84	Burroughs Falls	Nigger	QHEC	1929	-	180	1	2,000	2,000	1,600	1,600
Total capacity of plants under 1,500 kw.									26,960	17,398	
Total capacity of turbines connected directly to mechanical equipment									59,365		
Total (all plants)									15,316,552	11,008,696	

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
New Brunswick											
1	Beechwood	Saint John	NBEPCC	1957	1962	57	2	45,000 55,000	145,000	36,000 40,500	112,500
2	Grand Falls	Saint John	NBEPCC	1928	1931	125	4	20,000	80,000	15,750	63,000
3	Tinker	Aroostook	MNBP	1906	1965	85	2 2 1	2,000 5,000 33,000	47,000	1,500 3,520 20,800	30,840
4	Tobique	Tobique	NBEPCC	1953	1953	75	2	13,500	27,000	10,000	20,000
5	Great Falls	Nepisiguit	BPPC	1921	1930	108 110	2 1	5,000 5,500	15,500	3,600 3,600	10,800
6	Sisson	Tobique	NBEPCC	1965	1965	135	1	12,500	12,500	10,000	10,000
7	Musquash	Musquash	NBEPCC	1920	1920	99.5 124.5	2 1	3,670 3,760	11,100	2,320 2,320	6,960
8	Milltown	St. Croix	NBEPCC	1911	1967	21 25 30 1	3 1 1 1	1,080 500 468 500	4,708	770 376 350 400	3,436
9	Edmundston	Madawaska	FC	1918	1918	21.1	2	1,000	2,000	1,000	2,000
Total capacity of plants under 1,500 kw.									3,025		2,500
Total capacity of turbines connected directly to mechanical equipment									5,000		
Total (all plants)									352,833		262,036

Nova Scotia

1	Weymouth Falls	Sissiboo	NSPC	1960	1967	122	2	12,000	24,000	9,000	18,000
2	Deep Brook	Mersey	NSPC	1950	1950	46	2	6,400	12,800	4,500	9,000
3	Big Falls	Mersey	NSPC	1929	1929	58	2	6,350	12,700	4,500	9,000
4	Lower Lake Falls	Mersey	NSPC	1929	1929	48.5	2	5,300	10,600	3,690	7,380
5	Cowie Falls	Mersey	NSPC	1937	1937	43	2	5,100	10,200	3,600	7,200
6	Ruth Falls	East, Sheet Harbour	NSPC	1927	1936	110 109	2 1	3,145 4,300	10,590	2,000 2,970	6,970
7	Hells Gates	Black	NSLPC	1930	1949	185	1 1	4,500 4,500	9,000	3,360 3,570	6,930
8	Nictaux	Nictaux	NSLPC	1954	-	382	1	9,000	9,000	6,800	6,800
9	Gulch	Bear	NSPC	1956	-	225	1	8,500	8,500	6,000	6,000
10	Sissiboo Falls	Sissiboo	NSPC	1960	-	87	1	8,000	8,000	6,000	6,000
11	Upper Lake Falls	Mersey	NSPC	1929	1929	31.5	2	2,350	4,700	2,700	5,400
12	Hollow Bridge	Black	NSLPC	1940	-	148	1	7,500	7,500	5,312	5,312

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
NOVA SCOTIA (Cont'd)											
13	Tidewater	North East	NSPC	1921	1921	91.5	2	3,450	6,900	2,320	4,640
14	Lower Great Brook	Mersey	NSPC	1955	1955	22	2	3,120	6,240	2,250	4,500
15	Ridge	Bear	NSPC	1957	-	140	1	5,300	5,300	4,000	4,000
16	Dickie Brook	Dickie Brook	NSPC	1948	1948	298	1	1,750		1,200	
							1	1,750	3,500	2,600	3,800
17	Avon No. 1	Avon	NSLPC	1958	-	117.5	1	5,000	5,000	3,750	3,750
18	Malay Falls	East, Sheet Harbour	NSPC	1924	1954	43	2	1,850		1,200	
						41	1	1,740	5,440	1,200	3,600
19	Paradise	Paradise Brook	NSLPC	1950	-	465	1	5,000	5,000	3,600	3,600
20	Methal's	Methal's Brook	NSLPC	1949	-	45	1	4,600	4,600	3,400	3,400
21	Sandy Lake	North East	NSPC	1927	1927	118	2	2,500	5,000	1,600	3,200
22	White Rock	Gasperaux	NSLPC	1952	-	58	1	4,000	4,000	3,200	3,200
23	St. Croix	St. Croix	MBPP	1934	-	148	1	4,200	4,200	3,000	3,000
24	Avon No. 2	Avon	NSLPC	1929	-	142	1	3,900	3,900	3,000	3,000
25	Lumsden	Black	NSLPC	1942	-	72	1	4,500	4,500	2,800	2,800
26	Mill Lake	North East	NSPC	1921	1921	162.5	2	1,900	3,800	1,280	2,560
27	Tusket	Tusket	NSPC	1929	1929	18	3	940	2,820	720	2,160
28	Salmon Hole	St. Croix	MBPP	1938	-	75	1	2,500	2,500	2,000	2,000
Total capacity of plants under 1,500 kw.									6,365		4,358
Total capacity of turbines connected directly to mechanical equipment									-		
Total (all plants)									206,655		151,560

Newfoundland

1	Bay d'Espoir	Salmon	NPC	1967	1967	-	3	100,000	300,000	76,500	229,500
2	Twin Falls	Unknown	TFPC	1962	1963	290	4	60,000	240,000	46,800	187,200
3	Deer Lake	Humber	BPC	1925	1930	247	4	16,000		11,284	
							3	16,000		11,305	
							2	29,000	170,000	19,950	118,951
4	Grand Falls	Exploits	PPP	1909	1938	109	3	2,500		1,500	
							1	36,000	43,500	26,000	30,500
5	Menihek	Ashuanipi (Labrador)	IOCC	1954	1960	34	2	6,000		4,250	
						40	1	13,500	25,500	10,200	18,700

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
NEWFOUNDLAND (Cont'd)											
6	Bishops Falls	Exploits	PPP	1909	1952	35	7	2,700		2,025	
7	Rattling Brook	Rattling Brook	NLPC	1958	1958	307	2	1,500	21,900	1,500	17,175
8	Mobile	Mobile	NLPC	1951	-	370	1	8,500	17,000	6,375	12,750
9	Watson's Brook	Corner Brook	BPC	1958	1958	559	2	13,000	13,000	9,350	9,350
10	Horse Chops	Horse Chops	NLPC	1953	-	276	1	10,000	10,000	7,650	7,650
11	Tors Cove	Tors Cove	NLPC	1942	1951	173	2	2,850		2,000	
							1	3,500	9,200	2,500	6,500
12	Cape Broyle	Horse Chops	NLPC	1952	-	176	1	7,600	7,600	6,000	6,000
13	Sandy Brook	Sandy Brook	NLPC	1963	-	115	1	8,000	8,000	5,950	5,950
14	Lookout Brook	Lookout Brook	WCPC	1945	1958	575	2	1,850		1,400	
							1	3,600	7,300	2,400	5,200
15	Petty Harbour	Petty Harbour	NLPC	1908	1926	190	2	2,100		1,600	
							1	2,750	6,950	1,800	5,000
16	New Chelsea	New Chelsea Brook	NLPC	1957	-	275	1	5,600	5,600	4,000	4,000
17	Seal Cove	Seal Cove	NLPC	1922	1927	190	1	1,500		1,200	
							1	3,040	4,540	2,400	3,600
18	Pierres Brook	Pierres Brook	NLPC	1931	-	263	1	4,500	4,500	3,200	3,200
19	Rocky Pond	Tors Cove	NLPC	1943	-	107	1	4,200	4,200	3,200	3,200
20	Lockston	Lockston	NLPC	1956	1961	270	2	2,000	4,000	1,500	3,000
21	Hearts Content	Heart's Content Brook	NLPC	1960	-	150	1	3,600	3,600	2,400	2,400
22	Buchans Brook	Buchans Brook	ASRC	1927	-	163	1	2,359	2,359	1,760	1,760
Total capacity of plants under 1,500 kw.									7,490	5,440	
Total capacity of turbines connected directly to mechanical equipment									22,000		
Total (all plants)									950,239	696,226	



Tufts Cove thermal plant, Nova Scotia.

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Burrard	Vancouver	BCHPA	1962	1967	Gas, oil	S	4	150,000	600,000
2	Port Mann	New Westminster	BCHPA	1959	1959	Oil	GT	4	25,000	100,000
3	Georgia	Chemainus	BCHPA	1958	1959	Oil	GT	2	19,750	75,500
								2	18,000	
4	Powell River	Powell River	MBPR	1948	1967	Wood-waste, oil	S	1	1,350	50,925
								1	1,200	
								1	10,500	
								1	1,875	
								1	36,000	
5	Watson Island	Watson Island	CCC	1950	1966	Oil, wood-waste	S	2	7,500	49,600
								1	34,600	
6	Harmac	Nanaimo	MBPR	1954	1963	Oil, wood-waste	S	1	31,500	36,750
								1	4,000	
								1	1,250	
7	Somass Mill	Port Alberni	MBPR	1963	-	Wood-waste	S	1	26,000	26,000
8	Prince George	Prince George	BCHPA	1957	1963	Oil	IC	7	3,000	21,000
9	Chetwynd	Chetwynd	BCHPA	1958	1967	Gas, oil	IC	2	600	21,000
								1	800	
								1	1,000	
								4	3,000	
							GT	1	6,000	
10	Dawson Creek	Dawson Creek	BCHPA	1953	1963	Gas, oil	IC	2	1,000	20,000
								6	3,000	
11	Port Alice	Port Alice	RC	1942	1957	Oil, wood-waste	S	1	3,200	16,200
								2	3,500	
								1	6,000	
12	Ocean Falls	Ocean Falls	CZC	1930	1950	Oil, wood-waste	S	1	3,000	14,000
								1	2,000	
								1	4,000	
								1	5,000	
13	New Westminster	New Westminster	CZB	1912	1950	Wood-waste	S	1	5,000	12,500
								1	1,500	
								1	6,000	
14	Dry Dock	Prince Rupert	BCHPA	1950	1967	Oil	IC	3	800	12,404
								1	1,970	
								1	2,034	
							GT	1	6,000	
15	Eburne Sawmills	Vancouver	CFP	1960	1960	Wood-waste	S	2	5,750	11,500

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
16	Youbou	Youbou	BCFP	1929	1967	Wood-waste	S	1 2 1 1	800 750 2,000 5,000	9,300
17	Kitimat	Kitimat	ALCAN	1954	1959	Oil	IC	8	1,000	8,000
18	Tahsis	Tahsis	TCL	1956	1960	Coal	S	1 1	5,000 3,000	8,000
19	Taylor	Taylor	PP	1957	1957	Gas	S	3	2,500	7,500
20	Golden	Golden	KHFP	1966	-	Coal		1	7,500	7,500
21	Kelowna	Kelowna	SMS	1950	1963	Wood-waste, oil, coal	S	1 1 1 1	750 2,000 3,500 1,000	7,250
22	Woodfibre	Woodfibre	RC	1948	1961	Oil, wood-waste	S	2 1	2,000 3,000	7,000
23	Smithers	Smithers	BCHPA	1951	1965	Oil	IC	2 1 2 1	560 760 1,000 3,000	6,880
24	Port Moody	Port Moody	WCL	1958	1965	Coal	S	1 1	3,500 3,000	6,500
25	Mica Creek	Mica	BCHPA	1965	1965	Oil	IC	1 2 1	675 1,000 2,500	5,175
26	Port Mellon	Port Mellon	CFP	1928	1947	Oil	S	1 1 1	500 1,500 3,000	5,000
27	Semi-mobile unit No. 87		BCHPA	1965	-	Oil	IC	1	5,000	5,000
28	Vancouver	Vancouver	MBPR	1949	1956	Wood-waste	S	1 1	750 4,000	4,750
29	Kimberley (Stand-by)	Kimberley	CMSC	1927	1928	Coal	S	3	1,500	4,500
30	Victoria	Victoria	BCFP	1940	1950	Wood-waste	S	1 1	3,000 1,500	4,500
31	Giscome	Giscome	ELS	1951	1956	Wood-waste oil	S IC	1 1 1	1,500 2,400 300	4,200
32	Burns Lake	Burns Lake	BCHPA	1954	1965	Oil	IC	1 4 2	800 250 1,136	4,072
33	Elk Falls	Campbell River	EFC	1964	1965	Wood-waste	S	1 1	3,255 800	4,055
34	Hammond	Hammond	BCFP	1928	1929	Wood-waste	S	2	2,000	4,000
35	Cassiar	Cassiar	CAC	1952	1966	Oil	IC	3 2 1 1 1	300 350 450 650 1,200	3,900

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
BRITISH COLUMBIA (Cont'd)										
36	Chemainus	Chemainus	MBPR	1925	1950	Wood-waste	S	1 1	3,000 750	3,750
37	Vancouver	Vancouver	BCSRC	1947	1960	Gas, oil	S	3	1,250	3,750
38	Jedway	Jedway	JIOC	-	-	Oil	IC	3 1	1,000 225	3,225
39	Fort Nelson	Fort Nelson	BCHPA	1960	1960	Oil, gas	IC	1 1 1 1 1	1,200 600 261 100 1,000	3,161
40	Honeymoon Bay	Honeymoon Bay	WFI	1949	1961	Oil	S	1 1	1,000 1,760	2,760
41	Port Hardy	Port Hardy	BCHPA	1959	1965	Oil	IC	1 1 2 1	600 500 300 1,000	2,700
42	Celgar Pulp Mill	Celgar Pulp Mill	CCC	1963	-		S	1	2,500	2,500
43	Mesachie Lake	Mesachie Lake	HLC	1943	1949	Wood-waste	S	1 1	1,600 750	2,350
44	Endako	Endako	EM	1964	1964	Oil	IC	1 1	1,250 1,000	2,250
45	Hazelton	Hazelton	BCHPA	1965	1965	Oil	IC	3 2 1	200 600 250	2,050
46	Revelstoke	Revelstoke	COR	1926	1954	Oil	IC	2 1 1	300 400 1,000	2,000
47	Hazelton	Hazelton	HSL	1963	1965	Oil	IC	1 1	1,500 350	1,850
48	Tide Camp	Stewart	GM	1965	1965	Oil	IC	2 2	500 400	1,800
49	McBride	McBride	BCHPA	1951	1957	Oil, gas	IC	3	600	1,800
50	Sandspit	Queen Charlotte Islands	BCHPA	1962	1966	Oil	IC	2 1	600 500	1,700
51	Vanderhoof	Vanderhoof	BCHPA	1953	1955	Oil	IC	1 1	600 1,000	1,600
52	Zeballos Mines	Zeballos Mines	ZIM	1962	1964	Oil	IC	2 1	300 1,000	1,600
53	Valemount	Valemount	BCHPA	1962	1966	Oil	IC	3 1	350 500	1,550
54	Prince George	Prince George	NP	1967	-			1	1,500	1,500
Total capacity of plants 1,500 kw. and over (not listed above)									7,500	
Total capacity of plants under 1,500 kw.									32,410	
Total (all plants)									1,268,267	

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

Northwest Territories

1	Inuvik	Inuvik	NCPC	1957	1967	Oil	IC	2	375	
								1	150	
								1	960	
								2	1,000	
2	Frobisher Bay	Frobisher Bay	NCPC	1963	1966	Oil	S	1	600	4,460
							IC	1	1,000	
3	Port Radium	Port Radium	EMR	1936	1953	Oil	GT	1	960	
								1	500	
								1	500	
							IC	1	1,500	
4	Hay River	Hay River	NU	1959	1967	Oil	IC	2	150	
								1	864	
								2	650	
							IC	2	400	
5	Fort Smith	Fort Smith	NCPC	1956	1962	Oil	IC	1	175	3,639
								1	200	
								1	200	
							IC	1	250	
6	Tungsten	Tungsten	CTMC	1962	1962	Oil	IC	3	350	
								1	300	
								1	650	
							IC	1	500	
7	Fort Smith	Fort Smith	NCPC	1956	1962	Oil	IC	1	280	2,750
								1	300	
								1	650	
							IC	1	500	
8	Fort Smith	Fort Smith	NCPC	1956	1962	Oil	IC	1	280	2,232
								1	600	
								1	392	
							IC	1	960	
9	Tungsten	Tungsten	CTMC	1962	1962	Oil	IC	3	500	1,500
							IC			

Total capacity of plants 1,500 kw. and over (not listed above)

-

Total capacity of plants under 1,500 kw.

10,242

Total (all plants)

28,783

Yukon Territory

Total capacity of plants 1,500 kw. and over

-

Total capacity of plants under 1,500 kw.

5,400

Total (all plants)

5,400

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Wabamun	Wabamun	CP	1956	1967	Gas, coal	S	2 1 1	66,000 150,000 300,000	582,000
2	Edmonton	Edmonton	CE	1939	1966	Gas, oil	S	2 3 2	15,000 30,000 75,000	405,000
							GT	2	30,000	
							S	1	75,000	
3	Battle River	Forestburg	CU	1956	1964	Coal, oil	S	2	33,000	66,000
4	Fort McMurray	Fort McMurray	GCOS	1966	1967		S	2	30,500	61,000
5	Vermilion	Vermilion	CU	1948	1961	Gas	S	4	2,250	39,000
							GT	1	30,000	
6	Medicine Hat	Medicine Hat	CMH	1929	1953	Gas	S	1 1 1	3,000 5,000 30,000	38,000
7	Lethbridge	Lethbridge	CL	1931	1961	Gas	S	1 2	3,375 5,000	33,375
							GT	2	10,000	
8	Hinton	Hinton	NWPP	1956	1957	Gas, wood-waste, oil	S	1	21,760	23,860
							IC	1	1,100	
								1	1,000	
9	Clover Bar	Edmonton	C	1953	1966	Gas	S	3 1	6,000 4,00	22,000
10	Simonette	Simonette	CU	1966		Flare gas	GT	1	20,000	20,000
11	Sturgeon	Valleyview	CU	1958	1961	Flare gas	GT	1 1	10,000 8,500	18,500
12	Drumheller	Drumheller	CU	1928	1952	Coal	S	2 1	7,500 2,500	17,500
13	Two Hills	Duvernay	WC	1953	1958	Gas	S	3 1	300 1,200	13,537
							IC	6	500	
							GT	1	8,437	
14	Sentinel	Coleman	CP	1927	1929	Coal	S	2	5,000	10,000
15	South Power Plant	Edmonton	DPWA	1959	1963	Gas	GT	1	2,100	9,300
							S	1	5,000	
							S	1	2,200	

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
16	Fairview	Fairview	NU	1954	1960	Gas	IC	3	3,000	9,000
17	Taber	Taber	CSF	1950	1967	Gas, oil	S	1	2,000	7,975
								1	1,675	
								1	4,300	
18	Fort Saskatchewan	Fort Saskatchewan	SGM	1954	1959	Gas	S	2	2,500	5,000
19	Fort McMurray	Fort McMurray	CU	1954	1967	Oil	IC	3	500	4,625
								1	350	
								1	225	
								1	150	
								2	1,200	
20	Whitcourt	Whitcourt	PAPC	1958	1964	Gas	IC	2	300	4,600
								5	800	
21	Rimbey	Rimbey	BA	1960	1963	Gas	S	4	1,000	4,000
22	Grande Prairie	Grande Prairie	CU	1948	1955	Gas, oil	IC	1	800	3,900
								1	600	
								1	2,500	
23	Glenmore Filter Plant	Calgary	COC	1965	1965		S	2	1,800	3,600
24	Jasper	Jasper	NU	1941	1967	Oil	IC	1	1,200	3,324
								1	474	
								1	850	
								1	500	
								1	300	
25	Foot Hills Hospital	Calgary		1965	1965		S	2	1,000	2,450
							IC	1	450	
26	Edmonton	Legislative Bldg.	DPWA	1953	1965	Gas	S	2	800	2,100
								1	500	
27	Picture Butte	Picture Butte	CSF	1936	1964	Gas	S	1	1,250	2,000
								1	750	
28	Edmonton	Alberta Hospital	DPWA	1929	1954	Gas	S	1	600	1,600
								1	500	
								1	300	
								1	200	
29	Rainbow Lake	Rainbow Lake	NU	1967	1967		IC	3	500	1,500

Total capacity of plants 1,500 kw. and over (not listed above)

4,000

Total capacity of plants under 1,500 kw.

14,450

Total (all plants)

1,433,196

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Boundary Dam	Estevan	SPC	1959	1960	Coal	S	2	66,000	132,000
2	Queen Elizabeth	Saskatoon	SPC	1958	1959	Gas, oil, coal	S	2	66,000	132,000
3	A. L. Cole	Saskatoon	SPC	1929	1957	Coal, oil, gas	S	1 1 2 1	10,000 15,000 25,000 30,000	105,000
4	Regina	Regina	SPC	1925	1960	Oil, gas	S GT	1 1 1 1 1	15,000 5,000 20,000 30,000 23,360	93,360
5	Estevan	Estevan	SPC	1929	1957	Coal, gas	S	1 1 1 1	5,000 15,000 20,000 30,000	70,000
6	Success	Success	SPC	1967	1967	Gas	GT	3	11,840	35,520
7	Kindersley	Kindersley	SPC	1955	1958	Gas	IC GT	3 2	3,000 10,000	29,000
8	Moose Jaw	Moose Jaw	SPC	1930	1952	Oil, gas	S	1 1	10,000 15,000	25,000
9	Kalium	Kalium	KC	1964	1964	Gas	S	2	7,500	15,000
10	Swift Current	Swift Current	SPC	1954	1957	Oil	IC	2 4	1,275 3,000	14,550
11	Eldorado	Eldorado	EMR	1952	1956	Oil	IC	4	2,250	9,000
12	Flin Flon	Flin Flon (Saskatchewan)	HBMS	1929	1951	Coal, oil	S	1 1	1,000 6,000	7,000
13	La Ronge	La Ronge	SPC	1953	1960	Oil	IC	2 2 1 1	50 100 350 1,000	1,650

Total capacity of plants 1,500 kw. and over (not listed above) 10,000

Total capacity of plants under 1,500 kw. 3,017

Total (all plants) 682,097

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

Manitoba

1	Selkirk	Selkirk	MH	1960	1967	Coal, oil	S	2	66,000	154,400
							GT	2	11,200	
2	Brandon	Brandon	MH	1957	1958	Coal, gas, oil	S	4	33,000	132,000
3	Amy Street	Winnipeg	WH	1924	1954	Coal	S	2	5,000	50,000
								1	15,000	
								1	25,000	
4	The Pas	The Pas	MH	1948	1962	Oil	IC	1	1,100	6,250
								4	1,000	
								1	750	
								1	400	
5	Fort Churchill	Fort Churchill	DPW	1949	1963	Oil	IC	3	200	5,208
								4	300	
								3	1,136	
6	Fort Garry	Winnipeg	MSC	1940	1953	Oil	S	1	1,500	4,000
								1	2,500	
7	Churchill	Churchill	NHB	1931	1955	Grain refuse, oil, coal	S	1	1,500	3,800
								1	600	
							IC	1	1,250	
								1	200	
8	Thompson	Thompson	INCO		1958	Oil	IC	1	250	3,000
								2	1,500	

Total capacity of plants 1,500 kw. and over (not listed above) 4,000

Total capacity of plants under 1,500 kw. 3,671

Total (all plants) 366,329

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
Ontario										
1	Lakeview	Toronto	HEPCO	1961	1966	Coal Oil	S CT	5 4	300,000 7,500	1,530,000
2	Richard L. Hearn	Toronto	HEPCO	1951	1966	Coal Oil	S CT	4 4	100,000 200,000 7,500	1,230,000
3	J. Clark Keith	Windsor	HEPCO	1951	1967	Coal Oil	S CT	4 1	66,000 7,500	271,500
4	Douglas Point	Kincardine	HEPCO	1966	-	Uranium dioxide	S	1	200,000	200,000
5	Thunder Bay	Fort William	HEPCO	1963	-	Coal	S	1	100,000	100,000
6	Detweiler	Kitchener	HEPCO	1967	1967	Oil	CT	4	16,320	65,280
7	A. W. Manby	Toronto	HEPCO	1965	1966	Oil	CT	4	16,320	65,280
8	Windsor	Windsor	FMCC	1936	1952	Coal	S	1 1 2	10,000 4,000 25,000	64,000
9	Sarnia-Scott	Sarnia	HEPCO	1965	1966	Oil	CT	2 2	15,000 16,320	62,640
10	Sarnia	Sarnia	PC	1943	1956	Coal, oil	S	1 1 1 1	10,000 5,000 4,000 13,200	32,280
11	Lambton	Sarnia	HEPCO	1967	1967	Oil	CT	4	7,500	30,000
12	Sault Ste. Marie	Sault Ste. Marie	ASC	1942	1963	Gas, oil coal	S	2 2	12,500 625	26,250
13	Fort William	Fort William	GLPAC	1928	-	Gas, coal, wood- waste	S	1 1 1	4,000 5,000 17,100	26,100
14	Kapuskasing	Kapuskasing	SFPPC	1928	1958	Coal, gas, wood- waste	S	2 1 1	650 12,500 9,100	22,900
15	Nuclear Power De- monstration Unit	Rolphton	AECL	1962	-	Uranium dioxide	S	1	20,000	20,000
16	Marathon	Marathon	ACC	1946	1948	Coal, oil	S	1 2	7,500 4,000	15,500
17	Amherstburg	Amherstburg	BRMC	1938	1957	Coal	S	1 1 1	2,500 4,700 3,750	10,950
18	Hamilton	Hamilton	SCC	1948	1959	Coke- oven gas, oil	S	1 1	4,000 6,000	10,000

CT - Combustion Turbine, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)										
19	Thorold	Thorold	OPC	1937	1937	Coal, gas	S	2	4,000	8,000
20	Dryden	Dryden	DPC	1954	-	Coal, gas	S	1	6,000	6,000
21	Station No. 6	Gananoque	GELW	1959	1967	Gas	IC	2 1 1	1,360 1,200 1,250	5,170
22	Walkerville	Walkerville	HWS	1924	1955	Coal	S	2 1 1	1,000 2,500 625	5,125
23	Strathcona	Strathcona	SP	1955	1955	Coal	S	2	1,655	3,310
24	Chatham	Chatham	CDSC	1946	1946	Coal	S	2	1,500	3,000
25	Fort Frances	Fort Frances	OMPP	1927	-	Coal	S	1	3,000	3,000
26	Blind River	Blind River	MFLC	1927	1927	Wood-waste	S	1 1	750 2,000	2,750
27	Toronto	Toronto	CDSC	1959	-	Coal, gas, oil	S	1	2,500	2,500
28	Toronto	Toronto	CCCC	1937	-	Coal, oil	S	1	2,500	2,500
29	Ottawa	Ottawa	EBEC	1923	-	Coal	S	1	2,500	2,500
30	Port Arthur	Port Arthur	APPC	1928	-	Coal, wood-waste, gas	S	1	2,500	2,500
31	New Toronto	New Toronto	GTR	1940	-	Coal, oil	S	1	2,500	2,500
32	Pembroke	Pembroke	PELC	1929	1949	Oil	IC	1 2	933 671	2,275
33	Orillia	Orillia	OWLP	1947	1948	Oil	IC	1 1	1,000 1,136	2,136
34	Cardinal	Cardinal	CSC	1945	1964	Oil	IC	3 1 1	320 640 500	2,100
35	Peterborough	Peterborough	CGEC	1930	1949	Coal	S	1	2,000	2,000
36	Espanola	Espanola	KVPC	1947	1951	Coal	S	1	2,000	2,000
Total capacity of plants 1,500 kw. and over (not listed above)										99,250
Total capacity of plants under 1,500 kw.										10,500

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
Quebec										
1	Tracy	Tracy	QHEC	1964	1967	Oil	S	3	150,000	450,000
2	Les Boules	Les Boules	QHEC	1955	1960	Oil	GT	6	6,000	36,000
3	Kenogami Mill	Kenogami	PBC	1967	-	Oil	GT	1	14,750	14,750
4	Chandler	Chandler	GPP	1930	1954	Oil	S	1 1 1	6,000 2,500 4,000	12,500
5	Noranda	Noranda	NM	1934	1957	Waste heat	S	1 1 1	2,600 3,000 4,500	10,100
6	Drummondville	Drummondville	CCL	1935	1953	Coal, oil	S	1 1 1 1	1,500 2,500 3,500 2,000	9,500
7	Murdochville	Murdochville	GCM	1952	1955	Oil, waste heat	S IC	1 2 1	5,400 1,000 300	7,700
8	Thurso	Thurso	TPPC	1957	-	Coal, oil, wood-waste	S	1	7,500	7,500
9	Quebec City	Quebec City	ACPP	1927	-	Oil	S	1	6,000	6,000
10	Cap aux Meules	Îles-de-la-Madeleine	QHEC	1953	1964	Oil	IC	1 3 1	1,065 1,000 1,200	5,265
11	Magog	Magog	DTC	1938	1948	Coal	S	2	2,000	4,000
12	Montreal	Montreal	CDSC	1925	1947	Gas, oil	S	2 1	1,000 1,500	3,500
13	Gatineau	Gatineau	CIPC	1927	1960	Oil, wood-waste	S	4	750	3,000
14	Schefferville	Schefferville	IOCC	1956	1956	Oil	IC	3	1,000	3,000
15	Three Rivers	Three Rivers	CIPC	1922	1925	Oil, wood-waste	S	6	500	3,000
16	Havre St. Pierre	Havre St. Pierre	REC	1950	1963	Oil	IC	1 1 3	1,000 500 300	2,400
17	Port and Terminal (Stand-by)	Port Cartier	QCMC	1960	1960	Oil	IC	2	1,000	2,000

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)										
18	Lac Jeannine (Stand-by)	Gagnon	QCMC	1960	1960	Oil	IC	2	1,000	2,000
19	Havre St. Pierre	Havre St. Pierre	QHEC	1967	-	Oil	IC	2	1,000	2,000
20	Desmaraisville	Desmaraisville	CM	1960	1964			13 1	136 152	1,920
21	Rivière-du-Loup	Rivière-du-Loup	CRL	1947	1953	Oil	IC	2 1	240 1,360	1,840
22	Blanc Sablon	Blanc Sablon	QHEC	1965	1967	Oil	IC	2 1	600 350	1,550
Total capacity of plants 1,500 kw. and over (not listed above)										7,250
Total capacity of plants under 1,500 kw.										15,350
Total (all plants)										612,125

IC - Internal Combustion

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
New Brunswick										
1	Courtenay Bay	East Saint John	NBEPC	1961	1967	Oil	S	1 1 2	50,000 13,365 100,000	263,365
2	Grand Lake No. 2	Newcastle Creek	NBEPC	1951	1963	Coal	S	2 1 1	5,000 15,000 60,000	85,000
3	Chatham	Chatham	NBEPC	1948	1956	Coal, oil	S	1 1	12,500 20,000	32,500
4	Lancaster	Lancaster	IPP	1947	1960	Oil	S	1 1 1	2,000 10,000 12,500	24,500
5	Bathurst	Bathurst	BPPC	1937	1958	Coal, oil	S	1 1 1	6,000 7,600 7,000	20,600
6	Edmundston	Edmundston	FC	1949	1958	Coal, wood- waste	S	1 1 1	3,000 3,800 12,500	19,300
7	Dalhousie	Dalhousie	NBIPC	1929	1937	Coal	S	1 1 2 2	6,000 8,000 800 750	17,100
8	Dock Street	Saint John	NBEPC	1929	1947	Coal, oil	S	1 1	6,000 10,000	16,000
9	Newcastle	Newcastle	FC	-	1967	Coal	S	1	15,625	15,625
10	Grand Lake No. 1	Newcastle Creek	NBEPC	1931	1944	Coal	S	1 1	6,250 7,500	13,750
11	Atholville	Atholville	FC	1929	1956	Coal, wood- waste	S	3 1 1	1,000 2,000 5,000	10,000
12	Saint John	Saint John	ASR	1954	1962	Oil	S	1 1	2,500 1,000	3,500
13	Edmundston	Edmundston	ME	1947	1955	Oil	IC	2 1	690 1,876	3,256
14	Campbellton	Campbellton	CC	1946	1953	Oil	IC	1 1 1	240 1,136 1,360	2,736
15	Grand Manan	Grand Manan	NBEPC	1957	1966	Oil	IC	1 1 2 1	200 250 700 503	2,353

Total capacity of plants 1,500 kw. and over (not listed above)

Total capacity of plants under 1,500 kw.

2,000

Total (all plants)

531,585

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Lower Water Street	Halifax	NSLPC	1944	1959	Coal, oil	S	1	12,500	167,500
								2	20,000	
								1	25,000	
								2	45,000	
2	Glace Bay	Glace Bay	NSPC	1932	1966	Coal	S	2	6,000	108,000
								4	15,000	
								1	36,000	
3	Tufts Cove	Tufts Cove	NSLPC	1965	-	-	S	1	100,000	100,000
4	Trenton	Trenton	NSPC	1951	1959	Coal	S	2	10,000	60,000
								2	20,000	
5	Sydney	Sydney	DOSCO	1919	1943	Coal, oil, gas	S	1	7,600	34,600
								2	3,000	
								1	5,000	
								1	16,000	
6	Harrison Lake	Maccan	NSPC	1926	1949	Coal	S	1	15,000	26,500
								1	6,000	
								1	1,500	
								1	4,000	
7	Abercrombie Point	Albercrombie Point	SMP	1967				1	18,750	18,750
8	Port Hawkesbury	Point Tupper	NSP	1962	-	Coal	S	1	10,000	10,000
9	Brooklyn	Brooklyn	BMPC	1943	-	Oil, wood-waste	S	1	5,170	5,170
10	Dartmouth	Dartmouth	IOC	1965	-	Oil	S	1	3,750	3,750
11	King Street	Yarmouth	NSLPC	1937	1948	Oil	IC	1	320	1,920
								1	400	
								2	600	

Total capacity of plants 1,500 kw. and over (not listed above)

5,200

Total capacity of plants under 1,500 kw.

2,203

Total (all plants)

543,593

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

Prince Edward Island

1	Charlottetown	Charlottetown	MEC	1931	1963	Oil	S	1	1,500	50,500
								1	4,000	
								2	7,500	
								1	10,000	
								1	20,000	
2	Summerside	Summerside	MS	1940	1963	Oil	IC	1	200	6,890
								2	250	
								1	555	
								1	1,135	
								2	2,250	

Total capacity of plants 1,500 kw. and over (not listed above) -

Total capacity of plants under 1,500 kw. -

Total (all plants)

57,390

Newfoundland

1	St. John's	St. John's	NLPC	1957	1959	Oil	S	1	10,000	30,000
								1	20,000	
2	Control Centre	Holyrood	NPC	1966	-	Gas	GT	1	14,150	14,150
3	Grand Falls	Grand Falls	PPP	1930	1931	Oil	S	2	5,000	10,000
4	Corner Brook	Corner Brook	BPC	1957	-	Oil	S	1	6,600	6,600
5	Tilt Cove	Tilt Cove	TCPC	1960	-	Oil	S	1	5,000	5,000
6	Wabush Lake	Wabush Lake	WM		1963	Oil	IC	4	1,000	4,000
7	Labrador City	Carol Lake	IOCC			Oil				3,910
8	Palmquist	Gander	DOT	1948	1962	Oil	IC	3	1,000	3,000
9	Happy Valley	Goose Bay	NLPC	1967	1967	Oil	IC	2	1,100	2,950
								1	750	
10	Port aux Basques	Port aux Basques	NLPC	1945	1964	Oil	IC	2	350	2,539
								3	250	
								1	280	
								2	300	
								1	209	
11	St. John's	St. John's	NLPC	1956	-	Oil	IC	1	2,500	2,500
12	Salt Pond	Salt Pond	NLPC	1964	1964	Oil	IC	3	500	1,500

Total capacity of plants 1,500 kw. and over (not listed above) 4,000

Total capacity of plants under 1,500 kw. 17,327

Total (all plants)

107,476

GT - Gas Turbine, IC - Internal Combustion, S - Steam

OWNER CODE INDEX

This index provides an explanation of the code letters used in the "Owner" column of the preceding tables. The following abbreviations are used for the names of the provinces and territories of Canada:

British Columbia.....BC
Alberta..... Alta
Saskatchewan..... Sask
Manitoba..... Man
Ontario..... Ont
Québec..... Qué

New Brunswick..... NB
Nova Scotia..... NS
Prince Edward Island..... PEI
Newfoundland..... Nfld
Yukon Territory..... YT
Northwest Territories... NWT

CODE	OWNER	DEVELOPMENTS LOCATED IN
ACC.	American Can of Canada Limited	Ont
ACL.	Anaconda Company (Canada) Limited.	BC
ACPP.	Anglo-Canadian Pulp and Paper Mills Limited.	Qué
AECL.	Atomic Energy of Canada Limited.	Ont
AL.	Ayers Limited.	Qué
ALCAN.	Aluminum Company of Canada Limited	BC, Qué
APPC.	Abitibi Power and Paper Company Limited.	Ont
ASC.	Algoma Steel Corporation Limited	Ont
ASR.	Atlantic Sugar Refineries.	NB
ASRC.	American Smelting and Refining Company Limited	Nfld
BA.	British American Oil Company	Alta
BCFP.	British Columbia Forest Products Limited	BC
BCHPA.	British Columbia Hydro and Power Authority	BC
BCSRC.	British Columbia Sugar Refining Company Limited.	BC
BMPC.	Bowaters Mersey Paper Company Limited.	NS
BPC.	Bowater Power Company Limited.	Nfld
BPPC.	Bathurst Power and Paper Company Limited	NB
BRMC.	Brunner Mond Canada Limited.	Ont
C.	Chemsell (1963) Limited.	Alta
CAC.	Cassiar Asbestos Corporation Limited	BC
CC.	City of Campbellton.	NB
CCC.	Columbia Cellulose Company Limited	BC
CCCC.	Continental Can Company of Canada Limited.	Ont
CCL.	Canadian Celanese Limited.	Qué
CDSC.	Canada and Dominion Sugar Company Limited.	Ont, Qué
CE.	City of Edmonton	Alta
CFP.	Canadian Forest Products Limited	BC
CGEC.	Canadian General Electric Company Limited.	Ont
CIPC.	Canadian International Paper Company	Qué
CL.	City of Lethbridge	Alta
CM.	Coniagas Mines Limited	Qué
CMH.	City of Medicine Hat	Alta
CMSC.	Cominco Limited.	Sask, BC, NWT
CN.	City of Nelson	BC
CNPC.	Canadian Niagara Power Company Limited	Ont
COC.	City of Calgary.	Alta
COR.	City of Revelstoke	BC
CP.	Calgary Power Ltd.	Alta
CPUC.	Campbellford Public Utilities Commission	Ont
CRL.	City of Rivière-du-Loup.	Qué
CRPC.	Churchill River Power Company.	Sask
CS.	City of Sherbrooke	Qué
CSC.	Canada Starch Company Limited.	Ont
CSF.	Canadian Sugar Factories Limited	Alta
CTMC.	Canada Tungsten Mining Corporation Limited	NWT
CU.	Canadian Utilities Limited	Alta
CZB.	Crown Zellerbach Building Materials Limited.	BC
CZC.	Crown Zellerbach Canada Limited.	BC
DOSCO.	Dominion Iron and Steel Company Limited.	NS
DOT.	Department of Transport, Government of Canada.	Nfld
DP.	Donnacona Paper Company.	Qué
DPC.	Dryden Paper Company Limited	Ont
DPP.	Domtar Pulp and Paper Company Limited.	Qué
DPW.	Department of Public Works, Government of Canada	Alta, Ont
DPWA.	Department of Public Works, Government of Alberta.	Alta
DT.	Dominion Tar and Chemical Company.	Qué
DTC.	Dominion Textile Company Limited	Qué

CODE	OWNER	DEVELOPMENTS LOCATED IN
EBEC	E. B. Eddy Company	Ont, Qué
EFC.	Elk Falls Company Limited.	BC
ELS.	Eagle Lake Sawmills Company Limited.	BC
EM	Endako Mines Limited	BC
EMR.	Eldorado Mining and Refining Limited	NWT, Sask
ERC.	Electric Reduction Company	Qué
FC	Fraser Companies Limited	NB
FMCC	Ford Motor Company of Canada Limited	Ont
GCM.	Gaspé Copper Mines Limited	Qué
GCOS	Great Canadian Oil Sands Limited	Alta
GELW	Gananoque Electric Light and Water Supply Co. Ltd.	Ont
GLPAC.	Great Lakes Paper Company.	Ont
GLPC	Great Lakes Power Corporation Limited.	Ont
GM	Granduc Mines Limited.	BC
GPC.	Gulf Power Company	Qué
GPP.	Gaspesia Pulp and Paper Company Limited.	Qué
GTR.	Goodyear Tire and Rubber Company Limited	Ont
HBMS	Hudson Bay Mining and Smelting Company Limited	Sask
HCL.	Huronian Company Limited	Ont
HEPCO.	Hydro-Electric Commission of Ontario	Ont
HJP.	Hart Jaune Power Company	Qué
HLC.	Hillcrest Lumber Company Limited	BC
HSL.	Hazelton Sawmills Limited.	BC
HWS.	Hiram Walker and Sons Limited.	Ont
INCO	International Nickel Company of Canada Limited	Man
IOC.	Imperial Oil Limited	NS
IOCC	Iron Ore Company of Canada	Qué, Nfld
IPP.	Irving Pulp and Paper Limited.	NB
JIOC	Jedway Iron Ore Company Limited.	BC
JMC.	James MacLaren Company Limited	Qué
KC	Kalium Chemicals Limited	Sask
KHFP	Kicking Horse Forest Products Limited.	BC
KVPC	Kalamazoo Vegetable Parchment Company Limited.	Ont
LMC.	Lorraine Mining Company Limited.	Qué
MBPP	Minas Basin Pulp and Power Company	NS
MBPR	MacMillan Bloedel and Powell River Limited	BC
ME	Municipality of Edmundston	NB
MEC.	Maritime Electric Company Limited.	PEI
MFLC	McFadden Lumber Co. (Domtar)	Ont
MH	Manitoba Hydro	Man
MJ	Municipality of Jonquière.	Qué
MNBP	Main and New Brunswick Electrical Power Co. Ltd.	NB
MP	Manicouagan Power Company.	Qué
MQPC	MacLaren-Québec Power Company.	Qué
MS	Municipality of Summerside	PEI
MSC.	Manitoba Sugar Company Limited	Man

CODE	OWNER	DEVELOPMENTS LOCATED IN
NBEPC.	New Brunswick Electric Power Commission.	NB
NBIPC.	New Brunswick International Paper Company Limited.	NB
NCPC.	Northern Canada Power Commission	YT, NWT
NHB.	National Harbours Board, Government of Canada.	Man
NLPC.	Newfoundland Light and Power Co. Limited	Nfld
NM.	Noranda Mines Limited.	Qué
NP.	Northwood Pulp Company	BC
NPC.	Newfoundland and Labrador Power Commission	Nfld
NSLPC.	Nova Scotia Light and Power Company Limited.	NS
NSP.	Nova Scotia Pulp Limited	NS
NSPC.	Nova Scotia Power Commission	NS
NU.	Northland Utilities Limited.	Alta
NWPP.	North Western Pulp and Power Limited	Alta
OFM.	Ogilvie Flour Mills.	Qué
OHEC.	Ottawa Hydro-Electric Commission	Ont
OMPP.	Ontario-Minnesota Pulp and Paper Company Limited	Ont
OPC.	Ontario Paper Company.	Ont
OVPC.	Ottawa Valley Power Company.	Qué
OWLP.	Orillia Water Light and Power Commission	Ont
PAPC.	Pan American Petroleum Corporation	Alta
PAPUC.	Port Arthur Public Utilities Commission.	Ont
PBC.	Price Company Limited.	Qué
PC.	Polymer Corporation.	Ont
PELC.	Pembroke Electric Light Company Limited.	Qué, Ont
PHPC.	Peterborough Hydraulic Power Company	Ont
PP.	Pacific Petroleum Company Limited.	BC
PPP.	Price (Nfld) Pulp and Paper Limited.	Nfld
QCMC.	Québec Cartier Mining Company.	Qué
QHEC.	Québec Hydro-Electric Commission	Qué
QNSPC.	Québec-North Shore Paper Company	Qué
RC.	Rayonier Canada (BC) Limited	BC
REC.	Romaine Electric Company Limited	Qué
SAPC.	Saguenay Power Company	Qué
SCC.	Steel Company of Canada Limited.	Ont
SFPPC.	Spruce Falls Power and Paper Company	Ont
SGM.	Sherritt-Gordon Mines Limited.	Man, Alta
SMP.	Scott Maritimes Pulp Limited	NS
SMPC.	Smelter Power Corporation.	Qué
SMS.	S. M. Simpson Limited.	BC
SP.	Strathcona Paper Company Limited	Ont
SPC.	Saskatchewan Power Corporation	Sask
STLSA.	St. Lawrence Seaway Authority.	Ont
TCL.	Tahsis Company Limited	BC
TCPC.	Tilt Cove Power Corporation.	Nfld
TFPC.	Twin Falls Power Company Limited	Nfld
TPPC.	Thurso Pulp and Paper Company.	Qué

CODE	OWNER	DEVELOPMENTS LOCATED IN
WC	Western Chemicals Limited.	Alta
WCL.	Weldwood of Canada Limited	BC
WCPC	West Coast Power Company Limited	Nfld
WFI.	Western Forest Industries Limited.	BC
WH.	Winnipeg Hydro	Man
WKPL	West Kootenay Power and Light Company Limited.	BC
WM	Western Mines Limited.	BC
WML.	Wabush Mines Limited	Nfld
YCGC	Yukon Consolidated Gold Corporation.	YT
ZIM.	Zeballos Iron Mines Limited.	BC



LEGEND

TRANSMISSION LINES	
EXISTING	UNDER CONSTRUCTION
—	—
—	—
—	—
—	—
—	—

GENERATING STATIONS

●	HYDRO-ELECTRIC
▲	THERMAL-ELECTRIC

NOTE: ONLY STATIONS WITH TOTAL INSTALLED GENERATING CAPACITIES OF NOT LESS THAN 1500 KW ARE SHOWN

DEPARTMENT OF ENERGY, MINES AND RESOURCES
INLAND WATERS BRANCH

CANADA

MAIN ELECTRIC TRANSMISSION SYSTEMS
AND
PRINCIPAL POWER GENERATING STATIONS

SCALE OF MILES

STATUTE MILES 0 100 200 300 400 500
KILOMETERS 0 100 200 300 400 500

DECEMBER 1967



Inland Waters Branch
DEPARTMENT OF ENERGY, MINES AND RESOURCES
OTTAWA, CANADA

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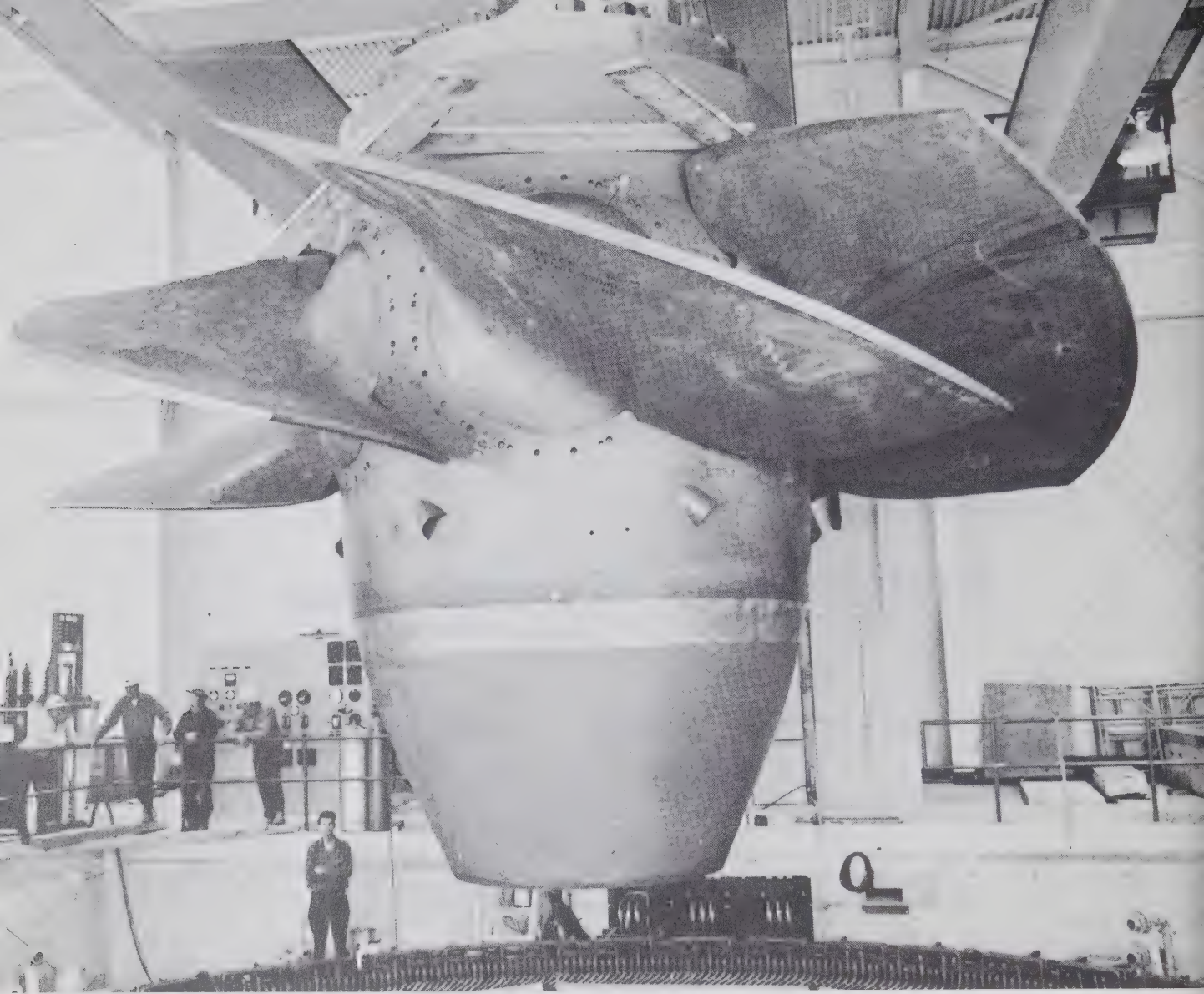
electric power in canada



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ELECTRIC POWER IN CANADA - 1968



*A 116-ton water wheel being lowered into position
at Grand Rapids hydro station, Manitoba.*



ELECTRIC POWER IN CANADA • 1968

DEPARTMENT OF ENERGY, MINES AND RESOURCES
INLAND WATERS BRANCH

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Cat. No.: M23-107/1968

PREFACE

"Electric Power in Canada" is compiled and published by the Inland Waters Branch for the Department's Energy Development Sector. It presents a general outline of the history of power development in Canada and discusses briefly the availability and distribution of water power and fuel resources. Also presented is a report in detail on progress during 1968 in the development and planning of new power generating facilities and a list of hydro and thermal generating stations with minimum installed generating capacities not less than 1,500 kw.

The Branch acknowledges with thanks the co-operation of the power-producing agencies in every province in Canada in making available the information used in the preparation of this publication. The Branch is indebted also to the Dominion Bureau of Statistics with whom close liaison has been maintained in the collection of information on existing power development.

The map inside the back cover shows main transmission systems and electric power generating stations in Canada.

A series of maps showing similar information in greater detail is available for the following regions:

1. British Columbia, Yukon Territory and Northwest Territories
2. Alberta, Saskatchewan and Manitoba
3. Ontario
4. Québec
5. New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland

These maps are available from:

Director
Inland Waters Branch
Department of Energy, Mines &
Resources
Ottawa 4, Ont.

Photographs were provided through the courtesy of the following organizations:

Atomic Energy of Canada
British Columbia Hydro & Power Authority
Calgary Power Ltd.
Cominco Limited
Hydro-Electric Power Commission of Ontario
Manitoba Hydro
New Brunswick Electric Power Commission
Newfoundland and Labrador Power Commission
Nova Scotia Light & Power Company Limited
Nova Scotia Power Commission
Québec Hydro-Electric Commission
Saskatchewan Power Corporation

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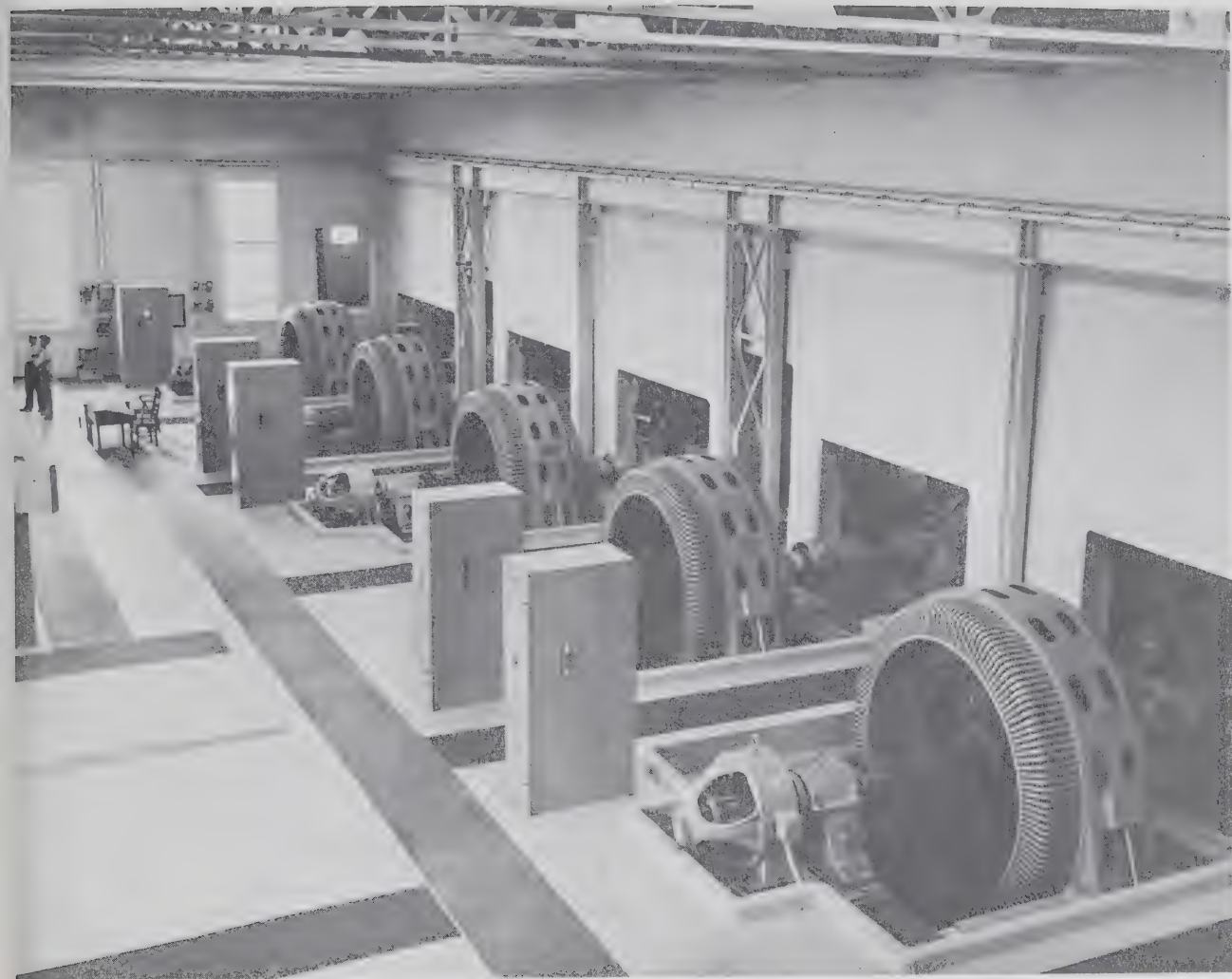
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MAP OF CANADA (showing main electric transmission systems and principal power generating stations) . . .	inside back cover

The Point Tupper thermal station under construction at Glace Bay, Nova Scotia. The Canadian General Electric Company's heavy water towers are also shown under construction in the background.



DEVELOPMENT OF ELECTRIC POWER IN CANADA



Generators at Bishops Falls in Newfoundland.

History of Power Development

The history of electric power development in Canada has been one of remarkable and sustained growth since the beginning of the century. The graph on page 5 illustrates the expansion in installed generating capacity in hydro and thermal stations that has taken place in the last fifty years. Table 1 shows hydro and thermal generating capacity by province or territory at December 31, 1968.

The graph shows that, although thermal power has made a significant contribution towards satisfying the nation's power needs, hydro power has carried by far the larger part of the burden. This is to be expected when one considers that

Canada, in terms of water power resources, is one of the most richly endowed nations in the world.

From a modest total of 133,000 kw. of generating capacity installed at the end of 1900, Canada's total installed hydro capacity rose to the substantial total of 25.0 million kilowatts by the end of 1968. In the same period, thermal capacity grew to 11.0 million kilowatts.

The rate of installation of thermal capacity in the early 1900's was extremely low and until the late 1940's the part played by

TABLE 1 - INSTALLED ELECTRIC GENERATING CAPACITY IN CANADA

31 December 1968

Province or Territory	Installed Generating Capacity - kw		
	Hydro	Thermal	Total
British Columbia	3,538,000	1,521,000	5,059,000
Alberta	616,000	1,439,000	2,055,000
Saskatchewan	584,000	691,000	1,275,000
Manitoba	1,184,000	375,000	1,559,000
Ontario	6,412,000	4,880,000	11,292,000
Quebec	11,049,000	764,000	11,813,000
New Brunswick	563,000	552,000	1,115,000
Nova Scotia	163,000	543,000	706,000
Prince Edward Island	-	77,000	77,000
Newfoundland	820,000	126,000	946,000
Yukon Territory	18,000	17,000	35,000
Northwest Territories	35,000	31,000	66,000
CANADA	24,982,000	11,016,000	35,998,000

thermal generating equipment in Canada's power economy was of relatively minor importance. On the other hand, improvements in electric power transmission techniques introduced at the turn of the century and an increasing emphasis on larger hydro plants led to a generally accelerated rate of development of hydro facilities.

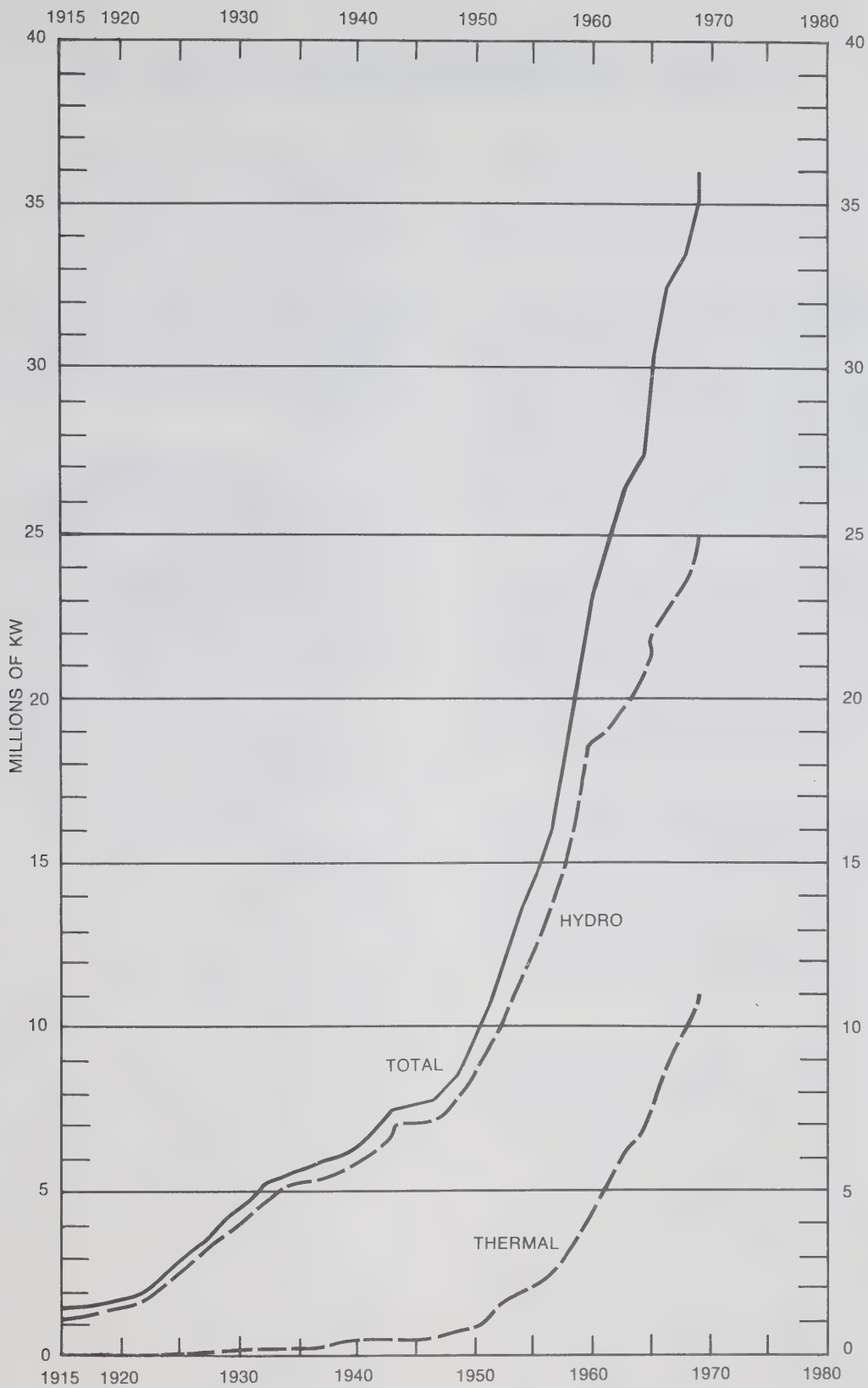
The noticeable jump in the hydro installation rate in the 1920's is a result of the heavy demand for electric power during this prosperous period. The drop in power demand during the depression years of the early 1930's did not become apparent in the installation rate until about 1935, due to the time lag which is inherent in hydro-electric power development. Hydro projects initiated prior to the depression years were completed, accounting for the continuation of a high rate of capacity installation up until 1935. Thereafter, poor economic conditions reduced the installation rate during the period 1935 - 1939.

The tremendous demand for power to drive Canada's war industries was responsible for the sharp rise in installation of new generating facilities between 1940 and 1943. However,

construction of new facilities decreased in the later war years, causing a second flattening in the growth curve from 1944 to 1947.

Post-war industrial expansion and rapidly-growing residential and agricultural developments imposed extremely heavy demands on power generating facilities. To stay abreast of these demands required the installation of new generating capacity at a rate higher than at any time in Canada's history. The sharp increase in installed generating capacity that followed could not be satisfied from hydro sources alone and this period marks the beginning of an extensive program of thermal plant construction.

In the period 1950 - 1968, the average annual rate of installation of both hydro and thermal facilities has been some 1.5 million kilowatts, with hydro contributing slightly less than two kilowatts of new capacity for each kilowatt contributed by thermal. It is of interest to note, however, that the average increase in thermal generating capacity over the five years 1964 - 1968 has equalled the average increase in hydro capacity and promises to surpass it in the not too distant future.



Growth of electric power generating capacity in Canada.

Current Trends in Power Development

Water power traditionally has been the main source of electric energy in Canada and this is still true today. Thermal sources, however, are playing an increasingly important role in power supply and undoubtedly will some day supersede water power as the main supplier of electric energy. The choice between the development of a hydro-electric power site and the construction of a thermal generating station must take into account a number of complex considerations, the most important of which are economic in nature.

In the case of hydro-electric projects, finance charges are high because of the large capital outlays involved but these are more than offset by low maintenance and operating costs. The long life of a hydro plant and its dependability and flexibility of operation in meeting varying loads are added advantages. Also important is the fact that the water which drives the hydro turbine is a renewable resource.

Probably the most important advantage of the thermal station, on the other hand, is that it can be located close to the demand area, with a consequent saving in transmission costs. However, with the current trend to large steam stations, some of the flexibility of location of thermal stations is lost because they require considerable quantities of water for cooling purposes, making it essential that they be sited near an adequate water supply.

The trend to thermal development which became apparent in the 1950's can be explained in part by the fact that in many parts of Canada, most of the hydro-electric sites within economic transmission distance of load centres had been developed and planners had to turn to other sources of electric energy. More recently, however, advances in extra-high-voltage transmission techniques are providing a renewed impetus to the development of hydro power sites previously considered too remote.

Large thermal units require a relatively long starting-up time and consequently lack flexibility of operation. They are most efficient for meeting conditions of continuous load. Hydro stations, on the other hand, can place generating units on line with a minimum of delay and hence are admirably suited to supply

power to meet the peak loads which may occur several times each day. By combining the advantages of both hydro and thermal stations in integrated supply systems, power producers are now achieving much greater flexibility of operation.

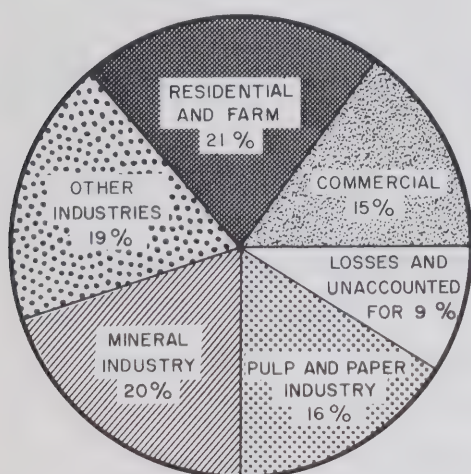
The trend toward larger, more economical thermal units to meet power demands results in the need for more reserve capacity to maintain the uninterrupted service customers have come to expect and rely on. However, as the total capacity of an operating system increases through either load growth or interconnection with other systems, the size of any one unit in relation to the total system capacity becomes less and the proportion of capacity required for reserve is reduced.

Another trend in development designed to meet the problem of varying daily loads is the use of pumped storage. An example is the Sir Adam Beck hydro development at Niagara Falls. Water taken from the Niagara River above the Falls is carried by means of a tunnel and a power canal to the penstocks which supply the main generating station on the bank of the Niagara River some distance below the Falls. In off-peak hours, surplus power from the main station is used to pump water from the power canal into a reservoir maintained at a higher level. During peak-load hours, the pumping-generating units operate as generators and are driven by water released from the reservoir. The pumping-generating units at the Sir Adam Beck development make available an extra 176,700 kw. of generating capacity. A pumping-generating station using the same general principle has recently been completed on the Brazeau River in Alberta as part of the 305,500-kw. Big Bend hydro development.

Perhaps the most promising application of the pumping-generating principle is its use in conjunction with nuclear power stations. Nuclear units, in common with large conventional thermal units, can be used most efficiently under conditions of continuous operation. Off-peak nuclear power can be used to operate pumping-generating units and the hydro-electric power derived from operating the units as generators is available for use during periods of peak demand.

Utilization of Electric Power

In 1968, Canada's generating facilities produced a total of 175,426 million kilowatt-hours of electric energy, after allowing for the energy used in the power stations themselves. Of this total, 134,600 million kilowatt-hours was produced in hydro-electric stations and 40,826 million kilowatt-hours in thermal stations. Energy imported from the United States exceeded by 472 million kilowatt-hours the energy exported to the United States during the year, bringing to 175,898 million kilowatt hours the total energy made available in Canada.



Principal uses of electric energy in Canada.

Industry uses approximately 55 per cent of the total electric energy made available in Canada; residential and farm use account for 21 per cent and commercial use, 15 per cent. The remaining 9 per cent is listed under "losses and unaccounted for". Because many power producers do not distinguish in their records between residential and farm customers, the amount of energy used is shown as a combined total. Energy used for street lighting, represents slightly less than one per cent of the total energy made available and is included in the "commercial" category.

INDUSTRIES

About 20 per cent of the total energy made available in Canada is used in the mineral industry, including smelting and refining, 16 per cent by the pulp and paper industry and 19 per cent by other industries. The chemical industry and the primary iron and steel industry together consume almost one-half of the total

amount used by the "other industries".

Approximately 75 per cent of the energy consumed by the mineral industry in Canada is used in the smelting and refining of metals.

Canada has no known deposits of bauxite but the availability of low-cost hydro-electric power has fostered the establishment of an aluminum industry which produces one-eighth of the world's supply of this metal. Further evidence of the value of water power to mining operations is provided by the fact that Canada's asbestos industry, which produces approximately 40 per cent of the total world supply of asbestos, obtains the major part of its power supply from hydro-electric sources.

The incidence of large water power resources in those regions in which the more important mineral deposits have been found has greatly facilitated mining development. Recent examples are the nickel mining and refining complex at Thompson, Manitoba, which uses hydro-electric power generated in the Kelsey plant on the Nelson River, and the iron ore mining operations in Labrador supplied by the Twin Falls plant on the Unknown River.

Metal mining, a very important division of the Canadian mining industry, is carried on mainly in two physiographic regions, the Western Cordillera and the Canadian Shield. In the Western Cordillera, the mountainous topography and the relatively high amounts of precipitation favour the development of water power. In the Canadian Shield, which is a Precambrian formation stretching in a wide sweep around Hudson Bay from the Mackenzie River basin to the eastern tip of Labrador, heavy glaciation in recent geological times has formed river systems which are comparatively young and are characterized by large numbers of lakes connected by short river sections with numerous rapids and falls suitable for development as hydro-electric power sites.

The pulp and paper industry in Canada is one of the world's great industrial enterprises. Total mill capacity for the production of newsprint paper in Canada is considerably greater than that of any other country in the world and in total production of wood pulp, Canada is second only to the United States. The fact that over 90 per cent of the manufactured newsprint is exported gives some indication of the importance of the industry to Canada's export trade program. By far the larger portion of the energy used in the pulp and paper industry is derived from water power.

Power and Population

The figures in Table 2 illustrate for each Province and Territory, and for Canada as a whole, the estimated population, the net total electric energy available for use and the per capita electric energy available for use.

A net total of 175,898,000 kilowatt-

hours of electric energy was made available for use in Canada by the electric industry during 1968, about 56 per cent of the amount which in theory could be generated if the 35,998,000 kw. of generating capacity installed at the end of 1968 was operating continuously.

TABLE 2 - POWER AND POPULATION

31 December 1968

Province or Territory	Estimated Population	Net total Electric Energy Available For Use 1,000's kwh	Per Capita Electric Energy Available For Use kwh
British Columbia	2,007,000	23,990,000	12,000
Alberta	1,526,000	7,664,000	5,020
Saskatchewan	960,000	4,374,000	4,560
Manitoba	971,000	7,272,000	7,490
Ontario	7,306,000	61,023,000	8,350
Quebec	5,927,000	60,485,000	10,200
New Brunswick	624,000	3,804,000	6,100
Nova Scotia	760,000	3,064,000	4,030
Prince Edward Island	110,000	197,000	1,790
Newfoundland	507,000	3,671,000	7,240
Yukon and N.W.T.	46,000	354,000	7,700
CANADA	20,744,000	175,898,000	8,620

Water Power Resources of Canada

Table 3 presents a summary of developed water power in Canada and an estimate of undeveloped water power potential, based on records maintained by the Inland Waters Branch.

Estimates of available power are shown for undeveloped sites only; for developed sites, the total generating capacity actually installed is indicated. It should be emphasized that the capacity installed at an existing hydro-electric development frequently is in excess of the continuous power available at the site. The relationship between installation and available power is explained more fully later in this section.

periods of low discharge under existing conditions of river flow. These estimates are based upon Q95, which is the natural or modified flow available 95 per cent of the time.

Column 3 lists the estimated dependable maximum power based upon Q50, the natural or modified flow available for at least 50 per cent of the time.

Column 4 lists the estimated dependable maximum power based on Qm, the arithmetical mean flow.

On rivers for which flow records are sparse or non-existent, estimates of flow are made from available information relating to run-off in the same general area.

Undeveloped Water Power

Column 2 of Table 3 lists the estimated continuous power ordinarily available during

As a rule, the figures of undeveloped water power at the various rates of flow reflect only the potential of undeveloped sites which at present are considered feasible for development.

TABLE 3 - WATER POWER RESOURCES OF CANADA

31 December 1968

Province or Territory	Undeveloped Water Power			Developed Water Power
	Available Continuous Power at 88% Efficiency			Installed Generating Capacity kw
	at Q95(a) kw	at Q50(b) kw	at Qm(c) kw	
British Columbia	4,697,000	15,954,000	23,984,000	3,538,000
Alberta	895,000	3,244,000	4,866,000	616,000
Saskatchewan	650,000	1,171,000	1,434,000	584,000
Manitoba	2,964,000	5,501,000	5,853,000	1,184,000
Ontario	462,000	1,088,000	1,635,000	6,412,000
Quebec	7,791,000	27,657,000	36,276,000	11,049,000
New Brunswick	29,000	106,000	276,000	563,000
Nova Scotia	21,000	112,000	161,000	163,000
Prince Edward Island	-	1,000	2,000	-
Newfoundland	1,195,000	3,450,000	4,641,000	820,000
Yukon Territory	664,000	3,237,000	5,689,000	18,000
Northwest Territories	864,000	2,232,000	3,322,000	35,000
CANADA	20,232,000	63,783,000	88,139,000	24,982,000

(a) - Power equivalent of flow available 95 per cent of the time.

(b) - Power equivalent of flow available 50 per cent of the time.

(c) - Power equivalent of arithmetical mean flow.



The 600-foot high W.A.C. Bennett dam on the Peace River, British Columbia.

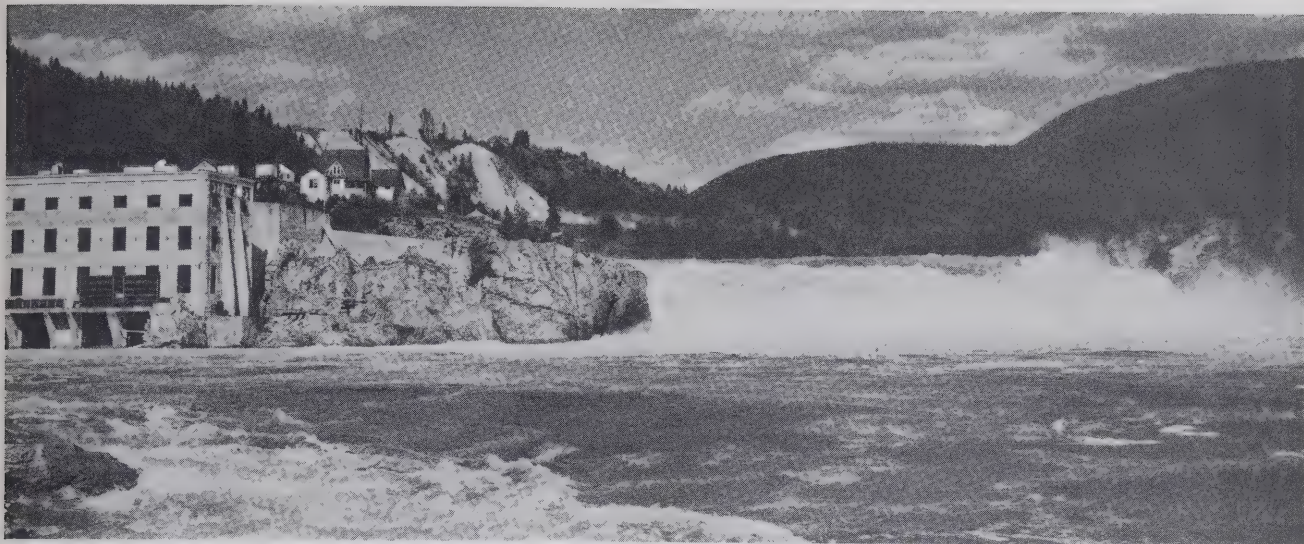
In the case of Québec, however, the figures of undeveloped water power reflect the gross potential, that is, the power which would be derived from development of the total head on the river, rather than the combined head at a number of specific sites. The figures for Québec are based only on rivers whose drainage areas exceed 3,000 square miles; the power potential of smaller rivers is neglected on the grounds that sites on these rivers will probably never be developed.

It should be emphasized that the figures of undeveloped water power in Column 2 represent only the minimum water power possibilities in Canada. The reason for this is that the estimates are based upon existing river flows, which for the most part do not reflect the benefits of streamflow regulation that would result from the development of storage potential. The figures of undeveloped water power in Column 3 correspond to the flow available 50 per cent of the time, with the result that partial regulation is required in some instances. The figures in Column 4, however, are determined from the arithmetical mean flow and represent the power obtainable if the entire

flow in the river could be regulated to provide a continuous flow of constant magnitude. Since this last condition assumes complete regulation, estimates of potential based upon arithmetical mean flow will exceed the amount of installed capacity that might be expected to be installed at the site, particularly where little or no storage is available. However, experience in the development of water power sites has indicated that in fact, the generating capacities installed at many recently developed sites greatly exceed what might be dictated by even the arithmetical mean flow.

Estimates of the magnitude of undeveloped water power resources are continually revised on the basis of the latest information available.

Several major river diversion possibilities exist, particularly in British Columbia, where topographical conditions make possible such rearrangements of flow. The estimates of potential of British Columbia's undeveloped hydro resources include figures based upon the diversion of rivers which, if they are developed at all, will almost certainly be developed on a combined-river basis.



Lower Bonnington hydro station on the Kootenay River, British Columbia.

Developed Water Power

The figures of installed generating capacity shown in Column 5 of Table 3 are based upon the manufacturer's rating in kilowatts as shown on the generator name-plate, or derived from the rating where it is indicated in kilovolt-amperes.

The maximum economic installation at a power site can be determined only by careful consideration of all the conditions and circumstances pertinent to its individual development and its role in the system. It is the usual practice, to install units which have a combined capacity in excess of the available continuous power at Q50, and frequently in excess of the power available at Qm. There are a number of reasons for this. The excess capacity may be installed for use at peak-load periods, to take advantage of periods of high flow, or to facilitate plant or system maintenance. In some instances, storage dams have been built subsequent to initial development to smooth out fluctuations in river flows. In other cases, deficiencies in power output during periods of low flow have been offset by auxiliary power supplied from thermal plants, or by inter-connection with other plants which operate under different load conditions or are located on rivers with different flow characteristics.

The extent to which the installed capacity exceeds the available continuous power at the various rates of flow is dependent upon the factors which govern the system of plant operation, and varies widely in different areas of the country. In some developments, the

difference may amount to several hundred per cent. For this reason, discretion should be used in comparing the figures in Column 5 with those in Columns 2, 3 or 4, as available continuous power and installed capacity are not directly comparable. As a rough guide, however, it may be assumed that the power equivalent of the flow at Q50 represents an approximate, although conservative, estimate of hydro generating capacity remaining to be installed in Canada.

Water Power Distribution in Canada

Table 3 indicates the distribution of undeveloped water power resources and installed generating capacity in Canada. A review of the table shows that substantial amounts of water power have been developed in all provinces except Prince Edward Island, where water power resources are meagre. As the development of Canada's natural resources proceeds, the fortunate incidence of water power in proximity to mineral deposits, pulpwood and other natural resources becomes increasingly apparent. There is little doubt that the existence of large amounts of potential hydro power on northern rivers will prove to be a factor of prime importance in the eventual realization of the natural wealth of Canada's north.

BRITISH COLUMBIA, traversed by three distinct mountain ranges and with, generally speaking, a high rate of precipitation, has many mountain streams which offer abundant opportunity for the development of hydro-electric power. In terms of recorded available water power resources, developed and undeveloped, the

province ranks second in Canada. In the amount of generating capacity installed, it is exceeded only by Québec and Ontario.

Notable for the magnitude of their power potentials are such rivers as the Columbia, Fraser, Peace and Stikine. Until 1968, none of these rivers was harnessed for electric power generation; late in the year, however, the first stage of development of the Peace River was brought into service to alleviate the demand for energy in the southern part of the province. The three new units on the Peace River each have an output of 227,000 kw., and currently are the largest hydro units in Canada. Development of the Columbia River, now well under way, is designed to provide initially three huge storage reservoirs and eventually to make available a significant amount of "at site" power in the Canadian portion of the basin.

The foremost producer and distributor of electric power in British Columbia is the provincially-owned British Columbia Hydro and Power Authority.

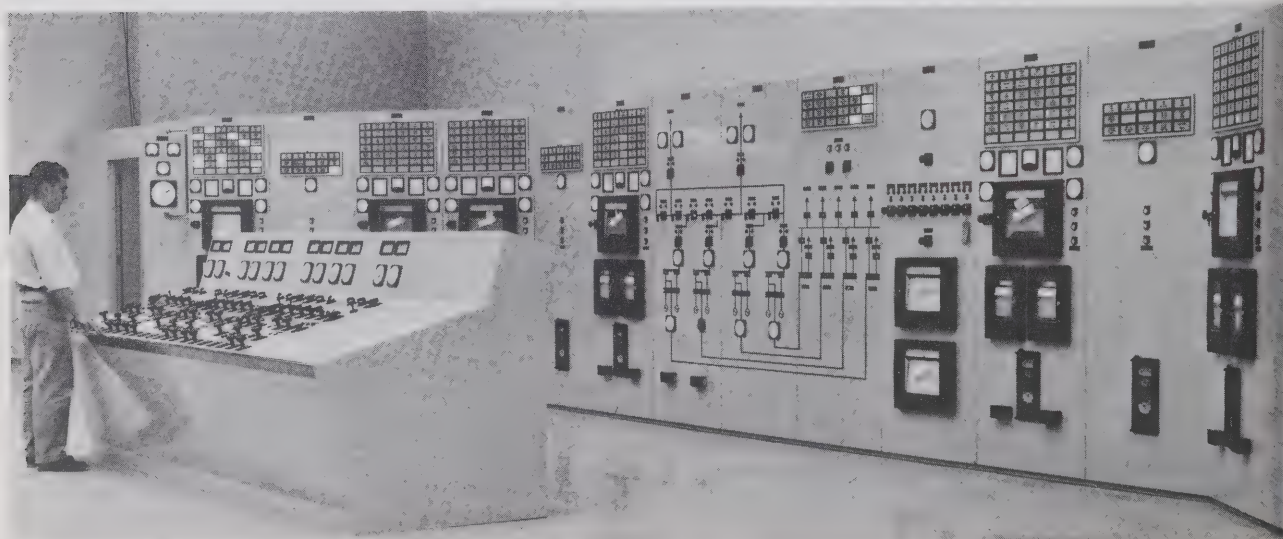
In ALBERTA, most of the principal hydro-electric developments are located on the Bow River and its tributaries, and from these developments, Calgary Power Ltd. serves most of the southern part of the province. The Big Bend development, completed in 1967 on the Brazeau River in the headwaters of the North Saskatchewan River, is now supplying power to augment the energy from the Bow River plants. Substantial water power resources are located in northern regions of the province, and although these are somewhat remote from present centres of population, the advent of extra-high-voltage transmission has enhanced the prospect of their development.

In SASKATCHEWAN, large water power resources exist in the central and northern parts of the province, principally on the Churchill, Fond du Lac, and Saskatchewan Rivers. Prior to 1963, power to serve the more settled parts of the province came from the thermal-electric plants fuelled by coal, oil or natural gas, while hydro-electric power generated in the province was used almost exclusively for mining purposes in northern areas. In 1963, Saskatchewan River power from Squaw Rapids, the first hydro development on the Saskatchewan River, began supplying the transmission network of the provincially-owned Saskatchewan Power Corporation.

Of the three Prairie Provinces, MANITOBA, with immense hydro-electric capabilities on the Winnipeg, Churchill, Nelson and Saskatchewan Rivers, is the most generously endowed with water power resources. For many years hydro-electric generating stations on the Winnipeg River have supplied most of the electric power requirements in southern Manitoba. However, Manitoba Hydro's high-voltage, long-distance transmission lines will carry ever-increasing amounts of power south from hydro-electric stations on northern rivers to help meet the province's constantly growing power demands.

Almost all of the sizeable water power potential in ONTARIO within easy reach of load centres has been developed and planners have been looking to the more remote sites as new sources of supply. The James Bay hydro-electric power complex, which has been under development since 1958, has involved the construction of three plants on the Mattagami River and one on the Abitibi River. The last of the four plants came into service in 1966. Power from this

Control room at Squaw Rapids hydro station in Saskatchewan.



complex is fed to southern Ontario via extra-high-voltage transmission lines. Investigation of the power potential of Ontario rivers flowing into Hudson Bay and James Bay is part of a comprehensive investigation of the water resources of the region, undertaken late in 1965 by the Governments of Canada and Ontario. Power plant construction is going on in the area north of Lake Huron and several sites in this area and in the headwaters of the Ottawa River are under investigation.

Most of the hydro-electric power produced in the province comes from the generators of the Hydro-Electric Power Commission of Ontario, Canada's largest power producing and distributing organization. Ontario's largest hydro development is located on the Niagara River at Queenston, where the Sir Adam Beck - Niagara Generating Stations Nos. 1 and 2, and the associated pumping-generating station have a combined generating capacity of 1,804,200 kw. In addition to the power generated in its own plants, the Commission purchases large amounts of electric power generated outside the province.

QUEBEC is richest of all the provinces in water power resources, possessing more than 40 per cent of the total recorded for Canada. Québec also leads in developed water power - its present installation of 11.0 million kilowatts representing about 44 per cent of the national total. The largest single hydro-electric station in Canada is the Québec Hydro-Electric Commission's 1,574,260-kw. Beauharnois development on the St. Lawrence River.

A major power scheme which represents a significant advance in the development of Québec hydro-electric resources has been under construction for several years. The scheme, involving the harnessing of the headwaters of the Manicouagan and Outardes Rivers, will permit the eventual installation of some 5.8 million kilowatts on the two rivers. At the end of 1968, a total of 1,550,000 kw. was in service on the two rivers.

The Québec Department of Natural Resources contributes to the production of hydro-electric power by operating 16 storage reservoirs to regulate the flow of the du Nord, Chicoutimi, Au Sable, du Loup, St.-François and du Lièvre Rivers on which hydro plants are located.

The water power resources of *NEW BRUNSWICK* and *NOVA SCOTIA*, although small in comparison with those of other provinces, are a valuable source of energy and make a substantial contribution to the economies of the two provinces. Numerous rivers in both provinces provide moderate-sized power sites either within economic transmission distance of the principal cities and towns or advantageously situated for use in development of the timber and mineral resources. These provinces also have extensive

indigenous coal supplies. In *PRINCE EDWARD ISLAND*, because there are no large stream, water power plants are limited in size to those used to operate small mills.

The water power resources of *NEWFOUNDLAND*, determined on the basis of the limited available streamflow data, are estimated to be of very considerable magnitude. On the island, although the length of the rivers is generally not great, topography and runoff are favourable for hydro-electric power development. Of the substantial capacity installed, a very large portion serves the pulp and paper industry. In Labrador, the Churchill River and its tributaries, now under development, constitute one of the largest sources of water power in Canada.

The *YUKON TERRITORY* and *NORTHWEST TERRITORIES*, which together comprise most of Canada's northland, possess extensive water power resources. Power from present developments is used almost exclusively to satisfy the needs of local mines and adjacent settlements. Due to the lack of developed native fuel sources and to transportation difficulties, water power is of special importance in the development of mining areas both in the Northwest Territories and in Yukon Territory. In 1948, to encourage the development of the resources of northern Canada, the Federal Government established what is now the Northern Canada Power Commission, to be responsible for the construction and management of electric generating and distributing facilities in the Territories.

In *YUKON TERRITORY*, most of the resources are located on the Yukon River and its tributaries. The possibility exists of diverting the headwaters of the Yukon River through the Coast Mountains and concentrating the head in a development near the tidewater in northern British Columbia. Such a development, however, would affect adversely the potential of sites on the main river.

Resources in the *NORTHWEST TERRITORIES* have not been surveyed to the same extent as those in Yukon Territory, but they are nevertheless known to be of considerable magnitude. Extensive water power resources exist on rivers flowing into Great Slave Lake and the Mackenzie River. Of major significance is the hydro-electric potential of the South Nahanni River, which drains to the Mackenzie River via the Liard River. On the basis of preliminary investigations it is estimated that, with total regulation and complete use of the head susceptible to development, the hydro-electric potential of the South Nahanni River would total close to one million kilowatts. Indications are that the rivers draining the District of Keewatin, north of Manitoba, also will contribute materially to the total power potential of the Northwest Territories.

Thermal Power Development in Canada

The incidence of immense water power resources in Canada and the brisk pace of their development has tended to overshadow the very considerable contribution being made by thermal energy in the nation's power economy. At the end of 1968, the total installed thermal generating capacity in Canada was 11,016,000 kw., about 31 per cent of the total of all electric generating capacity in the country. The fact that energy produced in thermal plants during the year accounted for only 23 per cent of the total may be attributed in part to the fact that a considerable amount of capacity installed is maintained for stand-by purposes.

The current emphasis on thermal plant construction is likely to continue and to become more marked as development of the nation's water power reserves becomes more complete.

Conventional Thermal Power

THERMAL GENERATING STATIONS

More than 90 per cent of all thermal power generating equipment in Canada is driven by steam turbines. The magnitude of the loads now being carried by steam plants has led to the installation of steam units with capacities as high as 300,000 kw. Even larger units of 500,000-kw. capacity will go into service within the next two or three years. The remainder of the load is carried by gas turbine and internal combustion equipment. The flexibility of internal combustion engines makes this type of equipment particularly suitable for meeting power loads in smaller centres, especially in the more isolated areas.

The figures in Table 1 indicate that the provinces of Alberta, Saskatchewan, Nova Scotia and Prince Edward Island depend upon thermal capacity for most of their power requirements. New Brunswick has slightly more hydro than thermal. In Ontario, the hydro capacity was nearly twice the thermal as recently as 1965; however, forecasts based upon present construction schedules indicate that by the end of 1970 the province's total installed thermal capacity will have overtaken hydro.

About two thirds of *BRITISH COLUMBIA'S* thermal generating capacity is installed in three plants located in the Vancouver area. The capacity of the largest of these plants, the Burrard generating station, was increased to 810,000 kw. in 1968. It is evident, however,

that hydro development is expected to meet the largest share of the provinces electrical load growth over the next few years.

The incidence of vast fuel resources in *ALBERTA* accounts for the emphasis on thermal power generation in the province. Alberta's largest thermal plants are the 582,000-kw. Wabamun steam station and the 405,000-kw. gas turbine and steam station at Edmonton. While large amounts of both hydro and thermal capacity have recently been installed, development projects over the next few years will be predominantly thermal.

Until recently, *SASKATCHEWAN* has relied upon thermal capacity to satisfy the needs of the more settled areas, hydro-electric power generated in the province being used almost exclusively for mining purposes in northern areas. Within the last few years creation of storage on the South Saskatchewan River has led to the development of two hydro sites, one of which was completed in 1966 on the Saskatchewan River. The other was brought on line in 1968 on the South Saskatchewan River. However, power needs in the province require the continuing expansion of thermal facilities; the largest under way at present is the 300,000-kw. addition at the Boundary Dam station, one of two large thermal stations in the province.

MANITOBA supplements its predominantly hydro-based power supply with a substantial amount of thermal capacity. At the present time, however, the emphasis is on development of the province's water power resources.

ONTARIO has more thermal capacity than any other province in Canada. The thermal capacity installed in the province at the end of 1968 totalled 4,880,000 kw., approximately 44 per cent of the national total. An additional 11.2 million kilowatts, including 5,160,000 kw. of nuclear electric capacity, is under construction or planned for initial operation by 1976.

The largest thermal units in service in Canada are rated at 300,000 kw. Ontario Hydro's Lakeview plant contains eight units with this maximum rating making it the largest single generating station in Canada. Larger units, rated at 500,000 kw., are being installed at the Lambton thermal station near Sarnia, while even larger ones, of 750,000 kw. each, are proposed for installation in a nuclear - thermal station near the existing Douglas Point station.

A large number of oil-burning combustion turbine units ranging in size from 7,500 to 16,320 kw. are being installed in various parts

of the province to provide reserve system capacity and to serve as emergency standby at the large generating stations. Their usefulness as reserve capacity was demonstrated in December 1967 when units in the East System carried 229,000 kw. of the system peak load. Their value as emergency standby was proven about the same time when two of the four 7,500-kw. combustion turbine units installed at Richard L. Hearn station in Toronto were used successfully in a simulated black start-up of one of the 200,000-kw. units. Isolated from station service power, the two combustion turbine units were started by battery power and were then used to supply the power necessary to start up the large unit.

The abundance of *QUEBEC'S* water power wealth, much of it within economic transmission distance of existing demand areas, has tended to limit the application of thermal power to specific local use. However, the growing emphasis on thermal power in other parts of Canada is also beginning to be apparent in Québec, where thermal capacity will not only help guarantee an adequate power supply in the face of increasingly heavy demands but also render the almost exclusively hydro-electric base more flexible through integrated operation. Installed capacity at the largest thermal station in Québec, the Tracy steam station near Sorel, was raised to 600,000 kw. in 1968, when the fourth and last unit was installed Québec's first nuclear station, on the south shore of the St. Lawrence River between Gentilly and Bécancour, is scheduled for service in 1971 with 250,000 kw. of electric power generating capacity; however, a lengthy test period will be required before full operation is reached in 1973-74.

Most of the energy generated in thermal-electric utility plants in *NOVA SCOTIA* is derived from coal, with a smaller amount from petroleum fuels. In *NEW BRUNSWICK* petroleum fuels produce slightly more than two-thirds of the thermal-electric energy. *PRINCE EDWARD ISLAND* depends almost exclusively on thermal sources for its power supply; all of the province's generating capacity is oil-fuelled. With the exception of large plants in St. John's and Grand Falls, most of the thermal-electric capacity in *NEWFOUNDLAND* is made up of relatively small units used to supply power to small, often isolated communities. With the wealth of water power in the Labrador region of the province, it is not likely that this northern region will experience the need for large thermal stations for some time to come; on the island, however, thermal facilities have attained a position of growing importance as witnessed by the construction of the 300,000 kw. Holyrood thermal station in southeastern Newfoundland. Thermal stations supply most of the electric power used in both *NOVA SCOTIA* and *NEW BRUNSWICK*. Nova Scotia's largest thermal station is the 167,500-kw. steam plant at Halifax; however, capacity at the

Trenton steam station will surpass it in 1969 when a 150,000-kw. unit is added to the existing 60,000-kw. capacity. New Brunswick's Courtenay Bay steam plant, with a capacity of 263,365 kw., is the largest in the province. A substantial addition to the province's thermal capacity is scheduled for initial service in 1969 at the new steam plant at Dalhousie.

Until 1965, most of the power requirements of the *NORTHWEST TERRITORIES* were satisfied from thermal sources. In 1965, however, commissioning of the Twin Gorges hydro station on the Taltson River altered the balance in favour of hydro. In *YUKON TERRITORY*, hydro is the main source of supply. Most of the thermal-electric energy used in the Territories is generated by small diesel units.

FUELS

Canada is favoured not only with abundant water power resources, but with exceedingly generous supplies of the fuels from which energy can be produced. Most important of these are coal, petroleum, natural gas and the radio-active ores used to fuel nuclear reactors.

Coal is by far the country's most abundant fuel resource. Most of Canada's coal is found in the western provinces, chiefly Alberta. Smaller quantities occur in the Maritime provinces of Nova Scotia and New Brunswick. Practically all of Canada's oil and natural gas reserves are located in the western provinces, with the greatest concentration in Alberta. The highly populated, industrial areas of southern Ontario and Québec are largely devoid of indigenous fuel supplies and have to rely upon fuels imported from other provinces and from outside Canada. Uranium, the fuel used in Canada's reactors, is available in considerable quantity in both eastern and western Canada.

In 1967, the latest year for which statistics are available, 65 per cent of the total energy produced in thermal-electric utility plants was derived from coal. Natural gas accounted for 19 per cent and petroleum fuels, 15.5 per cent. The remaining 0.5 per cent was generated from nuclear fuel.

Ontario was the main user of coal in 1967, with Alberta, Saskatchewan and Nova Scotia accounting for the bulk of the remainder. Almost all of the gas was used in Alberta, British Columbia and Saskatchewan. Petroleum fuels were used in every province in Canada. New Brunswick accounted for the largest quantity of petroleum fuels used, followed by Quebec and British Columbia

Nuclear Thermal Power

Commercial electric power generated from the heat of nuclear reaction was first produced in Canada in 1962 in the 20,000-kw. Nuclear Power Demonstration station at Rolphton, Ontario.

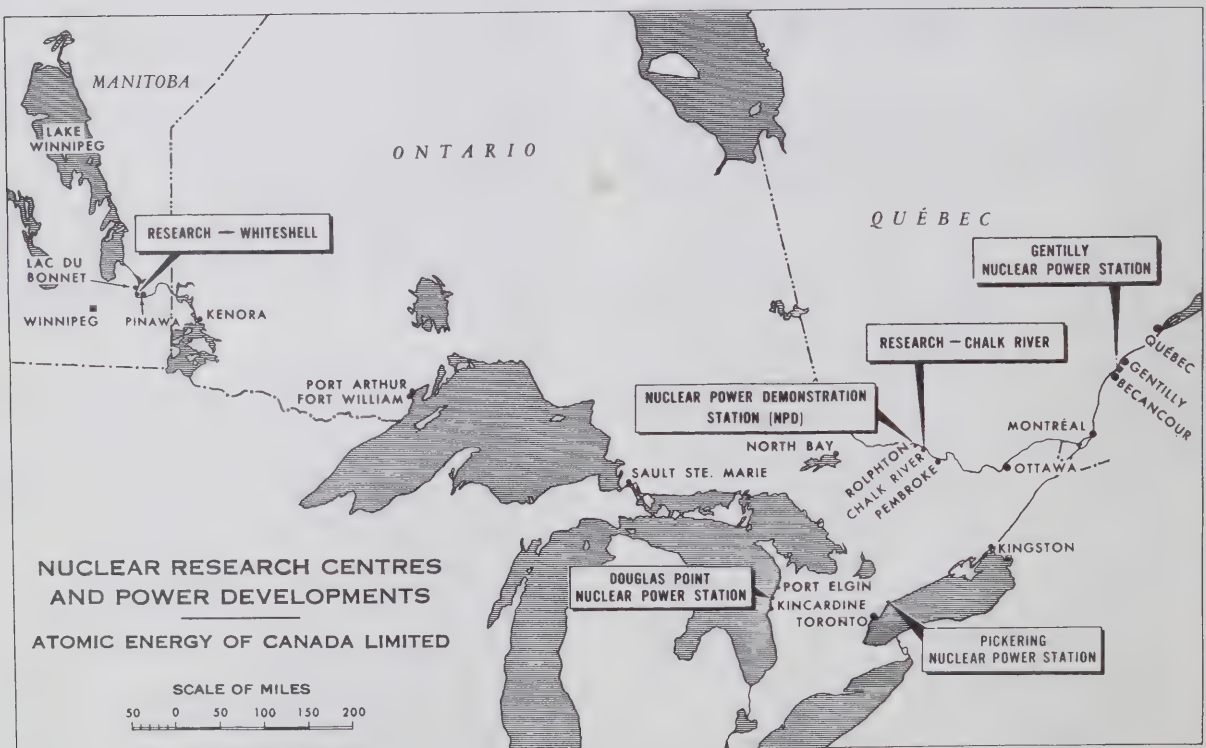
Research into reactor design and the application of nuclear energy in the electric power field are among the more important responsibilities of Atomic Energy of Canada Limited, a Government of Canada Crown Company incorporated in 1952.

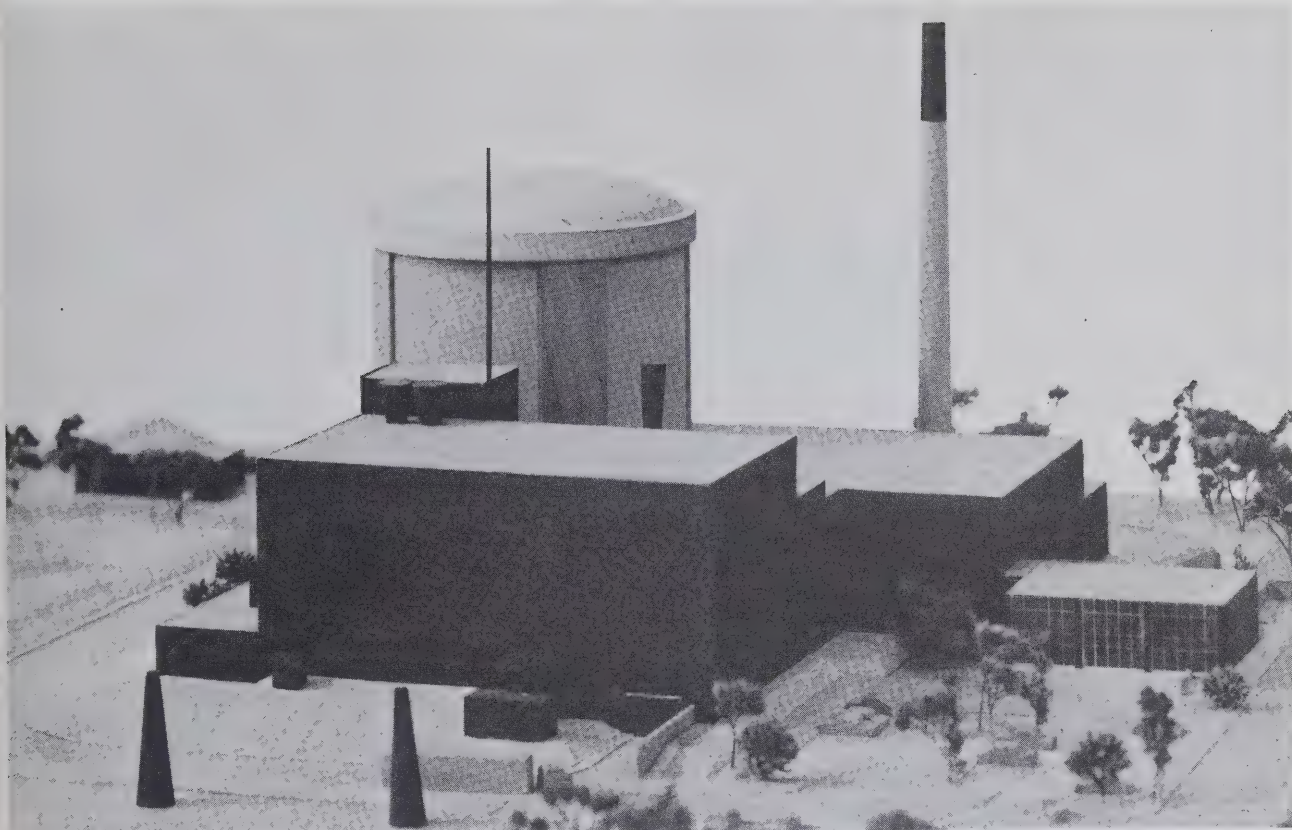
CANDU REACTOR

AECL has concentrated on the development of the CANDU reactor, which derives its name from "Canadian Deuterium Uranium". The CANDU reactor uses natural uranium as a fuel and heavy water as the moderator. Natural uranium is a low-cost nuclear fuel with a high energy yield, and represents a relatively minor item in the cost of power production compared to the use of other fuels; its availability in commercial quantities in Canada is a further advantage.

The essential and outstanding feature of the Canadian nuclear power reactor is its economical use of neutrons, the nuclear particles that play an essential part in the fission process. Also, CANDU reactors burn natural uranium fuel, and do so efficiently. The ultimate benefit from neutron economy is the fact that fuelling costs of CANDU reactors are less than half those of other established nuclear power systems. So efficient is the fuel cycle that there is no need to finance an inventory of spent fuel from a CANDU reactor. Since the spent fuel contains a sizable proportion of plutonium, it can be regarded as an asset which can be banked until such time as it becomes profitable to sell or to extract the plutonium for recycling in Canadian power reactors.

A design change in the reactor coolant from pressurized heavy water to boiling light water is taking place in the new Gentilly Station which is scheduled to undergo lengthy testing in the Province of Quebec in 1971. This new system which differs from the other commercial plants under construction in Canada offers savings in unit capital costs and fuelling costs and consequently in unit energy costs.





Artist's conception of Gentilly nuclear station in Quebec.

NUCLEAR POWER STATIONS

The Nuclear Power Demonstration station at Rolphton, has been used extensively to demonstrate the ability of the system to operate at a high capacity factor and to determine the nature and predictability of outages. Fuel changes while the system is in operation have become routine and a considerable amount of research into the sources of heavy water losses has been carried out. As a result of this research, losses have been cut considerably and the NPD is demonstrating that a very acceptable heavy water loss rate is attainable. NPD's role as an experimental station continued during 1968 with its conversion from a pressurized heavy water to a boiling heavy water reactor. The objectives of the conversion are to gain experience with startup, operation and shutdown of a multi-channel boiling system and to demonstrate the control and stability of such a system.

At the 200,000-kw. Douglas Point Nuclear Power Station on the shore of Lake Huron, the reactor went critical late in 1966 and the unit generated its first electricity in January 1967. The station then was in service intermittently while undergoing commissioning tests until July

when it was shut down because of difficulties in the heat transport system. By December 15, 1967, modifications permitted the station to be operated at about 75 per cent of its rated capacity. The unit, which produced its rated output of 200,000 kw. for the first time early in 1968, operated almost continuously during the winter period.

The nuclear-fuelled units (540,000 kw. each) in the Pickering Station, now under construction near Toronto, will compete in size with the largest conventional thermal units now coming into service. The Pickering Station will have four units, two for service in 1971 and the third and fourth in 1972 and 1973. Overshadowing these, however, will be the four 750,000-kw. units scheduled for installation during the period 1970-76 at the Bruce Nuclear Establishment on the shore of Lake Huron.

The Gentilly Nuclear Station with 250,000 kw. of nuclear electric capacity, is scheduled for lengthy tests beginning in 1971 and for full operation in 1973-74. The Gentilly Station is located at Pointe aux Roches on the south shore of the St. Lawrence River between Bécancour and Gentilly, about 10 miles from Trois Rivières.

HEAVY WATER

To help meet the demands of the expanding nuclear power program in Canada and the requirements of prospective CANDU purchasers overseas, Douglas Point was authorized as the site to build a heavy water production plant with a capacity of 800 tons per year. The plant which will be part of the Bruce Nuclear Establishment, will be similar in design to the 400-ton plant being built at Port Hawkesbury, Nova Scotia, by Canadian General Electric Company Limited.

NUCLEAR RESEARCH IN CANADA

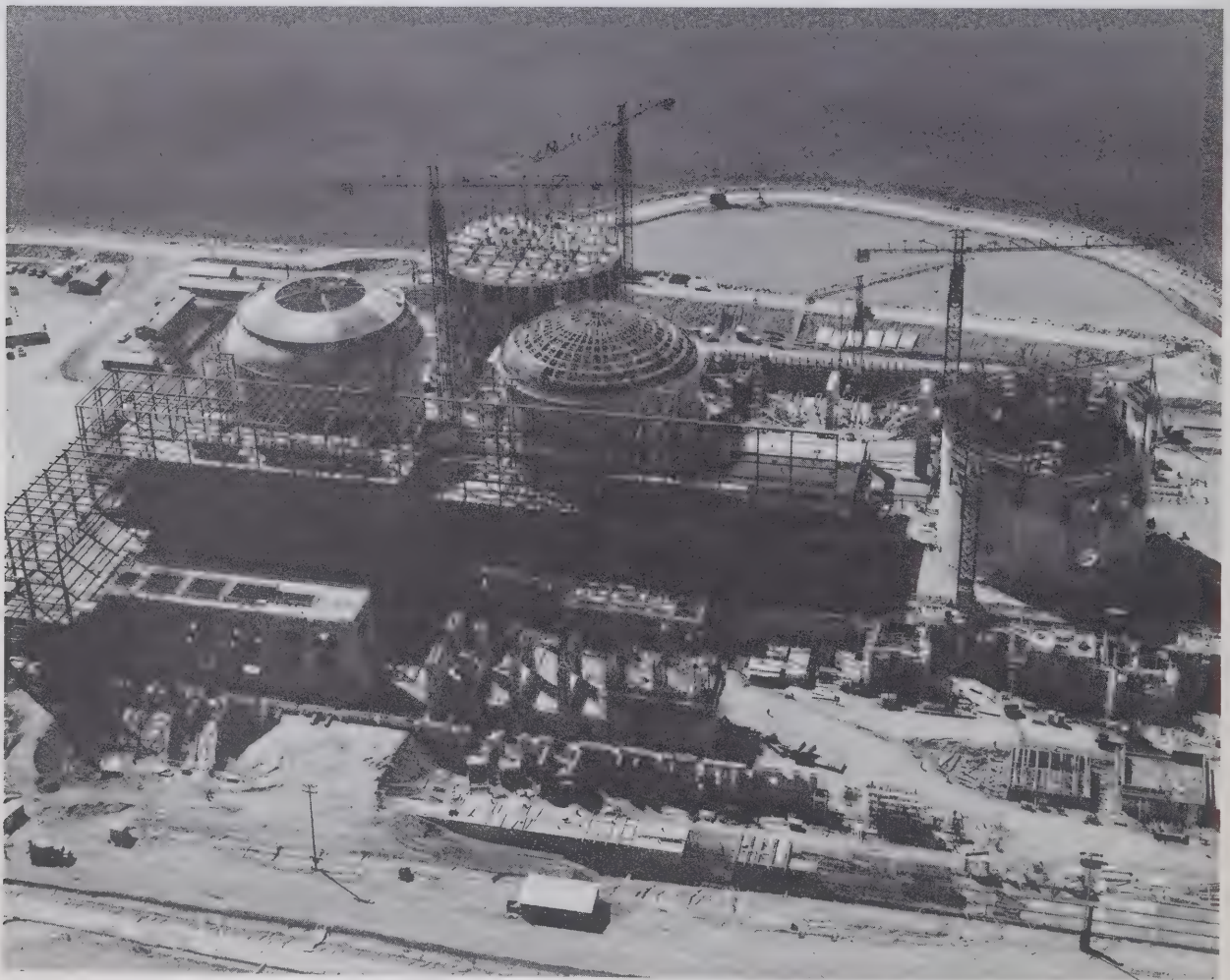
The principal nuclear research and development centres in Canada are AECL's Chalk River Nuclear Laboratories in Ontario and its Whiteshell Nuclear Research Establishment in

Manitoba.

The five reactors at Chalk River - none of which is a power reactor - are used for fundamental research in physics, chemistry, biology and medicine and for engineering studies related to the development of economic nuclear power or the production of radio-active isotopes.

Whiteshell Nuclear Research Establishment is the major centre for research and development in the nuclear field in Western Canada. The establishments primary facility is the WR-1 reactor, a variant of the basic CANDU system, designed and built to test the use of complex organic liquids as reactor coolants. Operation of WR-1 has been so successful that its role has now been expanded to include that of a materials testing reactor.

Construction at the 2,160,000-kw. Pickering nuclear station near Toronto, Ontario.





The 575-mile, 500-kv. transmission line from the Peace River project crossing the Pine River at Pine Pass, about 100 miles north of Prince George. Tower at right is part of second transmission line.

Electric Power Transmission

In the early days of the power industry in Canada, power systems were small and designed to supply specific local needs. The nature of the loads handled by these systems was not such as to warrant the expense of interconnection between systems. As time went on, however, the loads increased and changed in nature, the systems grew in size and improved techniques reduced transmission costs. The benefits of interconnection to integrate smaller power systems were re-appraised in the light of changing conditions and were found to offer advantages which far outweighed the costs.

The resulting amalgamation of the small systems into larger operating groups has gone on steadily and today most of the power produced in Canada comes from generating stations which are components of large, integrated and often interconnected power systems operated by power utilities and companies in the various provinces.

The integral role of power transmission in the process is obvious. In the days of small,

self-contained power systems, it was not necessary to carry power over great distances and low operating voltages were adequate. With the increase in transmission distances from the point of generation to the point of distribution and thence to the user, transmission methods had to be improved and operating voltages increased. Moreover, the growth in power demand, which was forcing power producers to consider the development of hydro-electric sites previously considered to be outside the economic transmission radius, added impetus to research in the field of extra-high-voltage (EHV) transmission.

This research has resulted in a successive stepping up of transmission voltages. In 1965, power was carried for the first time in Canada at 735-kv. when the transmission line between the Manicouagan-Outardes hydro complex in Québec and the cities of Québec and Montreal went into operation. Elsewhere in Canada, there are in operation or under construction, a number of transmission lines designed for operation at voltages of 500 kv. or more. In British Columbia, two 500-kv. lines connect the British

Columbia Hydro and Power Authority system with the Bonneville Power Administration system in the State of Washington. The lines are being operated for the present at 230 kv. Beginning in 1968, power from the Peace River was carried to the lower Mainland of British Columbia via a 574-mile, 500-kv. line. The 435-mile, 500-kv. line from a complex of hydro stations in the James Bay watershed to Toronto was completed in 1967.

Until 1968, power in Canada was transmitted exclusively over ac (alternating current) lines. However, the advantages of dc (direct current) transmission has encouraged Canadian power producers to consider construction of dc lines. One such line with a rating of ± 260 kv., began service in 1968 to augment an existing ac line between Vancouver Island and the British Columbia mainland. Another, in Manitoba, will carry power from the Nelson River to Winnipeg at ± 450 kv.

With the large increase in transmission distances, transmission costs will represent a much higher factor in the total cost of supplying power. The search for economies has led to many improvements not only in the materials used

but also in tower erection and cable stringing methods. Guyed aluminum V-shaped or Y-shaped transmission towers are being used increasingly in place of self-supporting towers where the terrain is suitable, and erection costs are being lowered by using helicopters to transport tower sections to the site and for tower assembly. The use of helicopters for spraying for bush control on line right-of-way and for line inspection and maintenance is becoming more widespread.

At present, interconnections of from 66 kv. to 230 kv. exist between systems in Alberta and British Columbia; between Saskatchewan, Manitoba and the western Ontario system; between the eastern Ontario system and Québec, and between New Brunswick and Nova Scotia. By 1970, completion of a 230-kv. link between the western and eastern Ontario systems will provide a direct connection between utilities from Saskatchewan to Quebec.

There are important international interconnections between British Columbia and the State of Washington; Ontario and the State of Michigan; Ontario and the State of New York; Québec and the State of New York and between New Brunswick and the State of Maine.



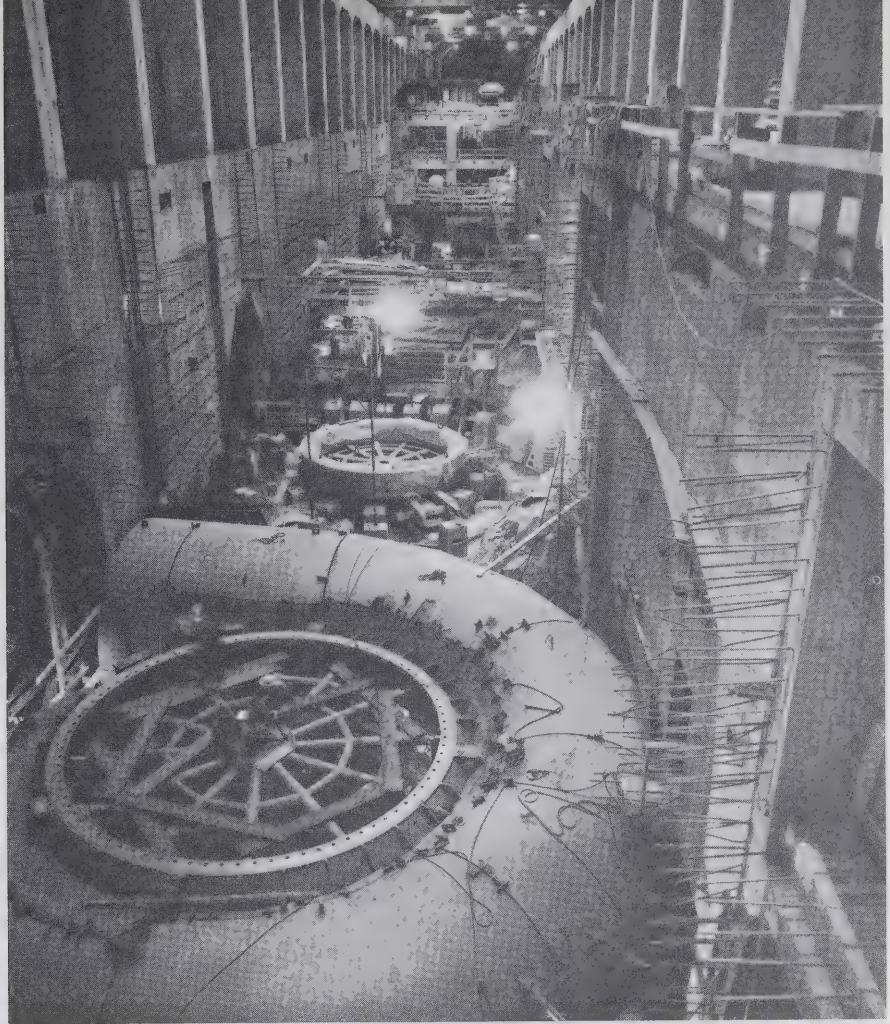
A 168-foot prototype tower undergoing stress tests near Warren, Manitoba. Similar towers will be used to carry direct current from the Kettle Rapids project on the Nelson River.

Aerial view of Mica damsite on the Columbia River, 85 miles north of Revelstoke, British Columbia. Outlets of two 45-foot diameter diversion tunnels can be seen at lower right.



PROGRESS IN DEVELOPMENT - 1968

Construction of the underground powerhouse at the Gordon M. Shrum development on the Peace River, British Columbia.



General Review

During 1968, a massive program of power plant construction in Canada boosted the nation's total generating capacity by 2,968,140 kilowatts, a new high in the amount of new capacity brought into service in a single year. Hydro-electric capacity accounted for 1,624,500 kw. or slightly more than half the total; the remaining 1,343,640 kw. was installed in conventional thermal stations. By the end of 1968, the total electric capacity installed in Canada stood at 35,978,000 kw., consisting of 24,989,000 kw. hydro and 10,989,000 kw. thermal.

In 1969, the 3,976,500 kw. of electric generating capacity scheduled for service will be greater even than 1968's record high total. Moreover, power developers across the country have indicated that over the next few years, 27,300,000 kw. will have to be installed to meet expected demands; this total will be met almost equally from hydro and thermal sources.

HYDRO-ELECTRIC PROJECTS

In 1968, the hydro-electric generating capacity brought into service totalled 1,624,500 kw., approximately 55 percent of all electric generating capacity installed in Canada during the year. British Columbia installed almost half of the new hydro capacity, followed by New Brunswick with some 300,000 kw. and Newfoundland, Ontario, Saskatchewan and Manitoba with slightly more than 100,000 kw. each.

Hydro capacity scheduled for service in 1969 should rise to 2,233,000 kw., a record high amount for a single year. Altogether, some 13,700,000 kw. of hydro capacity is scheduled for service in 1969 or later years. Almost two-thirds of the new capacity for 1969 will be installed on the Outardes River in Quebec.

The construction of several large hydro

projects continued throughout 1968. Outstanding are the Churchill Falls project in Labrador, the Manicouagan-Outardes complex in Quebec, the Peace River project in British Columbia, the Nelson River project in Manitoba and the Mactaquac project in New Brunswick. Smaller hydro projects were also under construction in all of these provinces and in Ontario, Saskatchewan, Nova Scotia and Yukon Territory.

Construction of the Churchill Falls hydro plant in the wilderness of Labrador continued on schedule during 1968. Utilizing a head of 1,040 feet, this imaginative project will ultimately realize 5,225,000 kw. and rank as one of the world's largest hydro stations. Plans call for first power in 1971-72. Almost all the electric power developed will be sold to Quebec.

In Quebec, no new hydro capacity was brought into service during 1968 at the Manicouagan-Outardes project. By the mid-1970's, however, installed capacity on the two rivers will have climbed from the present 1,560,000 kw. to almost six million kilowatts at nine sites.

In British Columbia, three of the ten units planned for the Peace River project were brought on line late in 1968. Two other units are scheduled for service in 1969 and completion of the entire plant in 1972. These units, consisting of 310,000-hp. turbines driving 227,000-kw. generators, are the largest hydro units in operation in Canada. Previously, the 250,000-hp., 161,500-kw. unit at Big Bend in Alberta was Canada's largest.

In Manitoba, construction of 1,220,000 kw. in twelve units at Kettle hydro station on the Nelson River proceeded on schedule. Four units with a total generating capacity of 406,000 kw. are scheduled for service in 1971.

In New Brunswick, the first three units with generating capacities totalling 300,000 kw. were brought into operation in 1968 at the Mactaquac hydro development on the Saint John River. The project ultimately will have a generating capacity of 600,000 kw. in six units, with the last three units to see service by 1976.

THERMAL-ELECTRIC PROJECTS

In recent years, heavy demand upon Canada's electric generating facilities has led to the construction of an increasing amount of new thermal capacity in each succeeding year. The year 1968 was no exception. The 1,343,640 kw. of new capacity installed in 1968 marked the fourth consecutive year of record high installation. The 1,743,500 kw. of thermal generating capacity already scheduled for installation in 1969 points to a continuation in this trend.

Many provinces in Canada have important thermal generating capacity under construction.

The most extensive program is that of Ontario which will account for 11,200,000 kw. of the total of nearly 14,000,000 kw. currently under construction or proposed for construction in Canada.

Conventional Thermal Stations

Three steam units, each rated at 300,000 kw., were brought into service in 1968 in the Lakeview station near Toronto, raising the station's total generating capacity to 2,430,000 kw., its maximum design capacity. The new units provide the Lakeview station with by far the largest generating capacity in a single station in Canada; until 1968, the largest single block of generating capacity was installed in the 1,574,000-kw. Beauharnois hydro station. In the thermal field, the second largest station in Canada is the 1,230,000-kw. Richard L. Hearn station, which is also located near Toronto.

In British Columbia, the fifth 162,000-kw. unit was brought into service in the Burrard steam plant in British Columbia. Ultimate development at Burrard will be reached with installation of the sixth unit.

In Quebec, the fourth and final 150,000-kw. unit was brought into service at Tracy.

Significant because of their size are three steam plants in Ontario - the Lambton station under construction near Sarnia, the Nanticoke station under construction in the Niagara region and the Bath station proposed for construction near Kingston. All three plants will consist primarily of four 500,000-kw. units each, making a combined total of 6,000,000 kw.

Nuclear Power Stations

Canada's first full-scale nuclear power station, the 200,000-kw. Douglas Point Nuclear Power Station on the eastern shore of Lake Huron, between Kincardine and Port Elgin, began initial service early in 1967.

Douglas Point's predecessor was the 20,000-kw. Nuclear Power Demonstration Plant (NPD) which began service in 1962 at Rolphton, Ontario. Operation of the NPD station over the past several years has demonstrated the soundness of the CANDU nuclear power reactor and helped to establish the design for the larger Douglas Point station and for three other stations under construction or proposed for installation in Ontario and Quebec.

Largest of the three new stations is a 3,000,000-kw. nuclear plant scheduled for construction during the period 1970-1976 near the existing Douglas Point station. Next is the

2,160,000-kw. Pickering station now under construction on the shore of Lake Ontario, just east of Toronto. The third station, located in Quebec on the south shore of the St. Lawrence River between Gentilly and Becancour, is the Gentilly Nuclear Power Station. The Gentilly station will have an output of 250,000 kw. and is expected to undergo lengthy testing beginning in 1971.

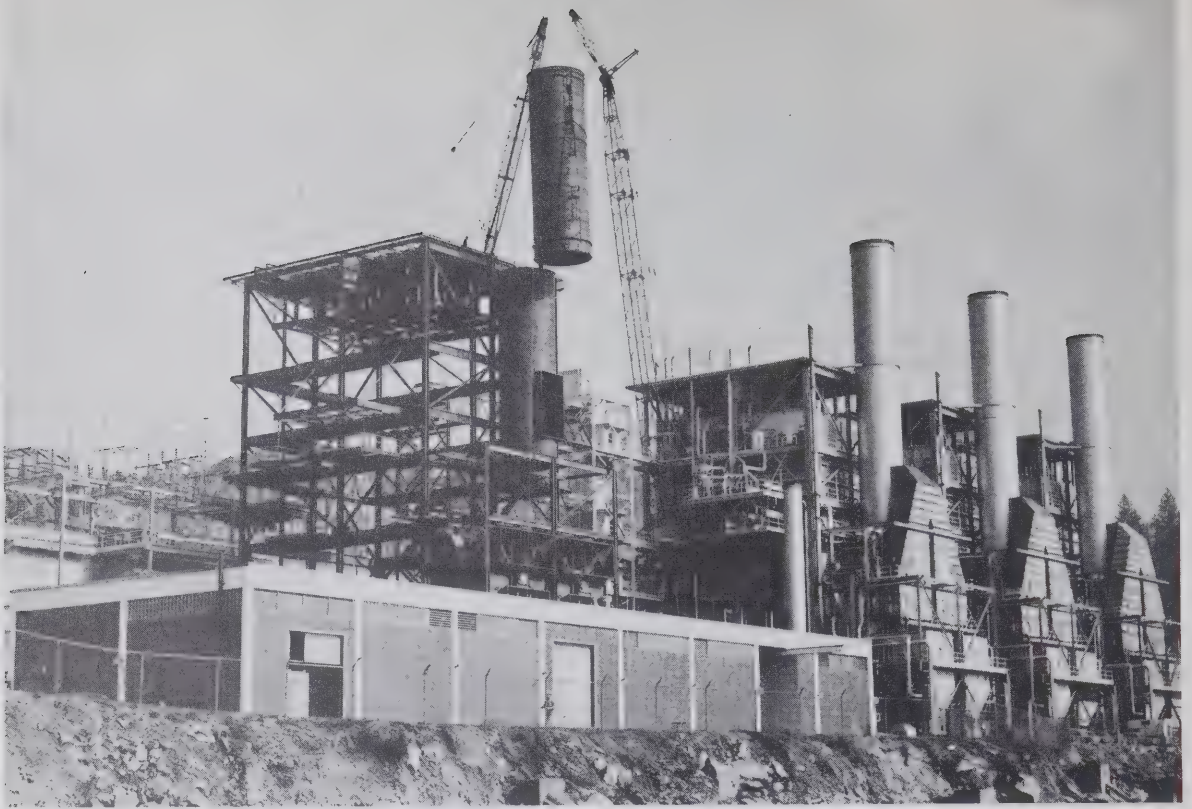
POWER TRANSMISSION

Continuing research into electric power transmission techniques has led to progressive stepping up of transmission voltages. In 1965, power was carried for the first time in Canada at 735 kv. when the transmission line between the Manicouagan - Outardes hydro complex and the cities of Quebec and Montreal was energized. Another first occurred in 1968 with the bringing into service of a ± 260 -kv. direct current (dc) interconnection between British Columbia's Lower Mainland and Vancouver Island.

Until 1968, power transmission in Canada was achieved exclusively via alternating current (ac) lines. However, the rapidly expanding power requirements on Vancouver Island prompted authorities in British Columbia to select dc transmission of energy generated on the Mainland as the best of several alternatives for meeting the Island's power growth. In Manitoba, the advantages of dc transmission for transmitting energy over long distances was instrumental in the choice of ± 450 -kv. dc lines to carry Nelson River power some 560 miles to the Winnipeg area.

The expanding technology of high voltage transmission has brought many remote hydro sites within economic transmission distance of load centres and has engendered interest in the possibility of a national power grid interconnecting major systems supplying the individual provinces. The Government of Canada, in co-operation with provincial authorities, carried out studies to determine the physical and economic possibilities of establishing such a grid. The resulting report, which was tabled in the House of Commons on December 11, 1968, concluded that while the marginal net benefits indicated for such a grid would not support action on the necessary facilities at this time, there should be a continuing review of the matter and a strengthening of regional transmission ties which could ultimately lead to a national network.

In November 1968 Hydro Quebec announced the beginning of construction of their Institute of Research near Boucherville, Quebec. This facility which is scheduled for completion in 1971 at an estimated cost of \$35 million is designed to satisfy utility and electrical industry needs for electrical testing and research at all voltages and currents. In addition to the high power and high voltage facilities, a general research laboratory will be included. The Institute will provide facilities essential for the expansion of existing power facilities and the study of new developments in the field of electrical energy which are not now available in Canada.



The fifth 162,000-kw. unit at the Burrard Steam plant near Vancouver was brought into service in 1968.

Progress in the Provinces

British Columbia

A net total of 936,850 kw. of generating capacity was installed during 1968 in British Columbia, 741,050 kw. in hydro stations and 195,800 kw. in thermal stations. Not included in these totals is a net increase of 6,000 hp., consisting of hydro turbines connected directly to mechanical equipment. A total of 454,000 kw. of hydro capacity is scheduled for installation in 1969 while another 1,300,000 kw., most of it hydro, is expected to be placed in service in the early 1970's.

During 1968, the province ranked first in the amount of new hydro capacity brought into service and was exceeded only by Ontario in the amount of new thermal capacity. The new completions, almost all of which belong to the provincial power authority, boosted the province's total generating capacity above the five million kilowatt mark.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

Hydro Electric Projects: Over the past decade, the average growth in electric power development in British Columbia has exceeded 10 per cent per year; the year 1968, with a 23 per cent growth in electric generating capacity, represented a record high year for the province. To meet most of this rapid rate of growth, the Authority is developing the Peace River hydro-electric project, extending existing hydro stations on the Campbell and Jordon Rivers and is planning the development of the Canadian portion of the Columbia River.

First power from the giant Gordon M. Shrum hydro station on the Peace River was realized in September when three of the project's ten 227,000-kw. units were brought on line. Installation of the fourth and fifth units in 1969 is proceeding on schedule; three of the five remaining units will be brought into service

by 1972, and the last two, as required. As already noted, these units are the largest hydro units operating in Canada.

The dam, officially designated the W.A.C. Bennett Dam in 1967, is 600 feet high and has a crest length of 6,700 feet. The reservoir created by the dam will have a water surface area of 640 square miles and a total capacity of 57,000,000 acre feet, about half of which will be usable capacity.

A 500-kv. transmission line stretching 575 miles from the power project to the Lower Mainland was energized in 1968. A second 500-kv. line was completed to Prince George and is expected to be extended during 1969 as far as Kelly Lake, near Clinton.

An important part of the Authority's power development program was met in 1968 by the addition of a 33,750-kw. unit at the Strathcona Development on the Campbell River, increasing the plant's capacity to 67,500 kw. in two units. Moreover, it was announced in 1968 that the existing 26,000-kw. Jordon River Development on Vancouver Island will be replaced with a 150,000-kw. peaking plant which is expected to be in service late in 1971.

COLUMBIA RIVER DEVELOPMENT

In September 1964, ratification by Canada of the Columbia River Treaty cleared the way for development of the Columbia River in Canada. Under the Treaty, Canada is required to build the Duncan, Arrow and Mica dams on the Canadian portion of the river system. In return, Canada is reimbursed by the United States for the downstream power benefits and flood damage prevention accruing to the United States from the operation of these dams.

Duncan Dam, scheduled for completion by April 1968, was operational in July 1967, well ahead of schedule. Similarly the Arrow Dam became fully operational early in October 1968, ahead of its April 1969 schedule. Operation of these dams has resulted in early receipt from the United States of lump sum payments totalling over \$68 million (Canadian funds) for the flood control benefits provided by the projects. Special energy and capacity benefits, representing Canada's share of the extra downstream benefits from storage which became available as a result of the early completions, were also received by Canada.

Construction of the Mica Dam project,

The 2,270,000-kw. Gordon M. Shrum underground powerhouse at the W.A.C. Bennett dam on the Peace River, British Columbia.



largest and costliest of the three dams, commenced in late 1965 and is scheduled for completion in April 1973. The river was diverted around the dam site in late 1967, excavation of riverbed materials to the underlying bedrock was completed in 1968 and a start was made on placement of the dam fill and excavation of the spillway channel. Completion of this last storage reservoir will facilitate development of several million kilowatts of hydro power in the Canadian portion of the basin.

Thermal-Electric Projects: The fifth unit at the Burrard steam plant near Vancouver was brought into service in 1968 increasing to 810,000 kw. the total generating capacity at the plant. A sixth 162,000-kw. unit, not yet scheduled, will raise the plant to its ultimate capacity.

The Authority dismantled and transferred two 3,000-kw. internal combustion units from its Prince George station to Mica Creek. Two 1,500-kw. units were installed at Golden. Smaller units of 500 kw. and 300 kw. were brought into initial service at Bella Coola and Wells, respectively.

More than 750 miles of 'ac' transmission line was brought into service in 1968, of which some 540 miles was 500-kv. lines associated with Peace River power development. The remainder consisted of 75 miles at 230 kv., 66.5 miles at 138 kv. and 73.5 miles at 60 kv. Still under construction or planned for early completion was another 438 miles of transmission line, including 205 miles at 500 kv. 'ac', 45 miles at 260 kv. 'dc' and 188 miles of 'ac' lines at voltage ranging from 230 kv. to 60 kv.

Of great significance to British Columbia was the energizing in 1968 of the 'dc' interconnection between the Mainland and Vancouver Island. Two 'dc' valve groups, one at each terminal, were brought into service in 1968, making possible the transmission of a maximum of 78,000 kilowatts via existing spare 'ac' transmission lines. In 1969, two 260-kv 'dc' underwater cables will raise the 'dc' transmission capacity to 312,000 kw.

CROWN ZELLERBACH CANADA LIMITED

In 1968, not 1967 as previously reported,

the Company completed replacement of six 2,000-hp. turbines with three turbines having a total capacity of 18,000 hp. at its Ocean Falls hydro station on the Link River. The 2,000-hp. units had been in operation for some fifty years. The new capacity is not reflected in the increased generating capacity for 1968 because the turbines are connected directly to groundwood pulping stones, and not to generators.

COMINCO LIMITED

The fourth and final generating unit at the Company's Brilliant hydro station on the Kootenay River was brought into operation. The unit has a generating capacity of 27,200 kw., raising the total generating capacity at the station to 108,800 kw.

THE CORPORATION OF THE CITY OF REVELSTOKE

In June 1968, the Illecillewaet hydro development was scrapped, removing 900 kw. of capacity. The transmission line associated with the plant is being rebuilt on the opposite side of the Columbia River as a result of the flooding of the valley by the Arrow Dam impoundment.

GRANDUC OPERATING COMPANY

Construction of a power plant and 7,500-ton concentrator at Tide Lake, 30 miles north of Stewart, was brought to completion in 1968. The new thermal station consists of two 15,000-kw. steam turbine generator units. The plant will eventually have another 2,300 kw. of standby diesel power. The electricity generated serves the mill and mine at Leduc and is transmitted via two 23-kv. cables, each capable of handling a load of 10,000 kva.

WEST KOOTENAY POWER AND LIGHT COMPANY, LIMITED

There was no increase in the Company's generating capacity during 1968. Existing substations at Glenmore and O.K. Mission were raised from 3.75/5 mva. to 10/13.3 mva. while two others at Castlegar and Osoyoos were increased from 3.75/5 mva. to 7.5/10 mva. The Company's D.G. Bell substation, about ten miles south of Rutland and with a capacity of 61.5/82 mva., was scheduled for service early in 1969.

Alberta

In Alberta, the year 1968 was an off-year in terms of the amount of new electric generating capacity being brought into service. The net increase in electric generating capacity during 1968 was only 3,255 kw. but work was well under-way on another 782,500 kw. for completion over the years 1969 through 1973.

The completion in 1967 of the Big Bend hydro development on the Brazeau River completed the activity in hydro installation in Alberta and capacity currently scheduled for installation is composed entirely of steam turbines. However, Calgary Power Ltd. is investigating a site on the North Saskatchewan River which could involve the construction of a reservoir with a storage capacity of 1,000,000 acre-feet and a hydro plant of about 100,000 kw.

CALGARY POWER LTD.

Work on the installation of a 300,000-kw. coal-fired unit at the new Sundance thermal station continued during the year. The new unit is scheduled for service in 1971.

The Company's transmission network was extended during 1968 by 295 miles including 133 miles at 230 kv. and 152 miles at 138 kv.

New substations with capacities ranging from 15mva. to 80mva. were brought into service at Banff, Redwater, Jarrow, Edmonton, Natal, B.C., and Fort Saskatchewan. Modification to existing substations were underway at fifteen other locations.

CANADIAN UTILITIES LIMITED

Canadian Utilities Limited installed a 30,000-kw. gas turbine unit in a new plant at Rainbow Lake. The unit was originally located in the Vermilion plant and its transfer to Rainbow Lake did not represent an increase in the Company's electric generating capacity. Similarly, a 2,500-kw. internal combustion unit was transferred from Grande Prairie to Fort McMurray; an additional 650-kw. unit installed during the year at Fort McMurray was more than offset by several small units totalling 725 kw. which were dismantled at that site. Another 1,195 kw. was installed at various locations in the Company's system while a corresponding amount of 1,775 kw. was dismantled.

Extension of the 66,000-kw. Battle River thermal station near Forestburg continued during 1968. By November 1969 a 150,000-kw. addition is expected to be brought into service.

The Company's transmission line mileage was increased in 1968 by 102 miles of 240-kv. line and another 22 miles at 144-kv. Three new substations of 50, 33 and 8 mva. were energized in 1968 while capacities at two existing substations were increased by a total of 9 mva.

NORTHLAND UTILITIES LIMITED

A 500-kw. unit was installed at the Company's Jasper internal combustion plant raising the capacity to 3,825 kw. Elsewhere in the system, a total of 1,525 kw. was added at various locations while capacities totalling 365 kw. were dismantled.

PAN AMERICAN PETROLEUM CORPORATION

The Company installed a 1,600-kw. internal combustion unit at its new West Whitecourt plant and brought its Ante Creek thermal station into initial operation with the installation of a 200-kw. unit.

CANADIAN SUGAR FACTORIES LIMITED

A 750-kw. addition to the Picture Butte steam plant raised the generating capacity to 2,750 kw.

CITY OF EDMONTON

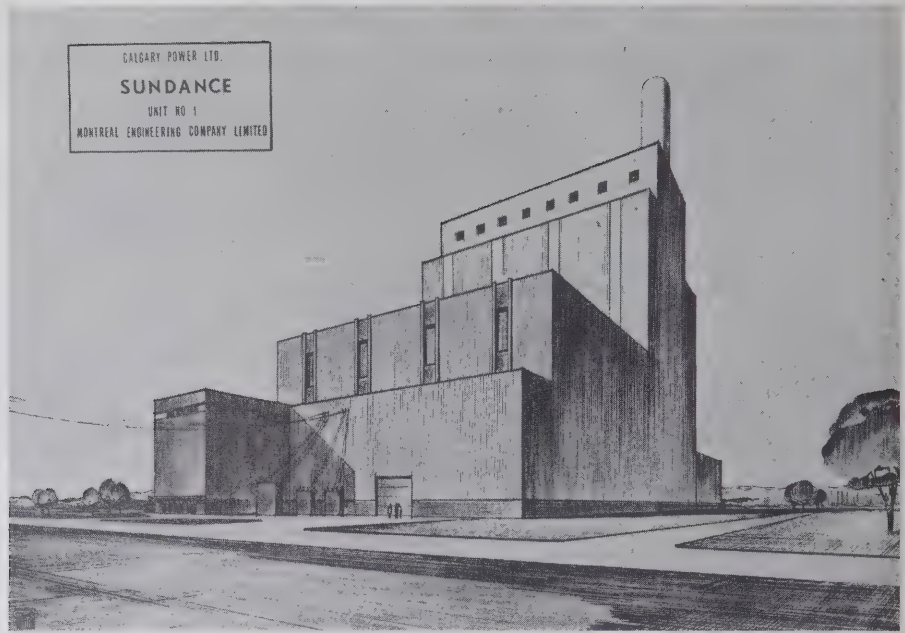
Major construction at the new Clover Bar thermal station in Edmonton got underway in 1968. The first of two 165,000-kw. steam units is scheduled for service in 1970, the second in 1973.

During the year, a total of 11.3 miles of 72-kv. line was under construction, most of it to be completed in 1969. The first stage of the Victoria substation (2-50/66.7 mva. transformers) was completed. In 1969, the first stage of the Meadowlark substation (2-30/40 mva. transformers) and also the first stage of the switchyard at the new Clover Bar station will be completed. The existing 60/80 mva. Strathcona substation will be expanded by the addition of one 30/40 mva. transformer and associated circuit breakers.

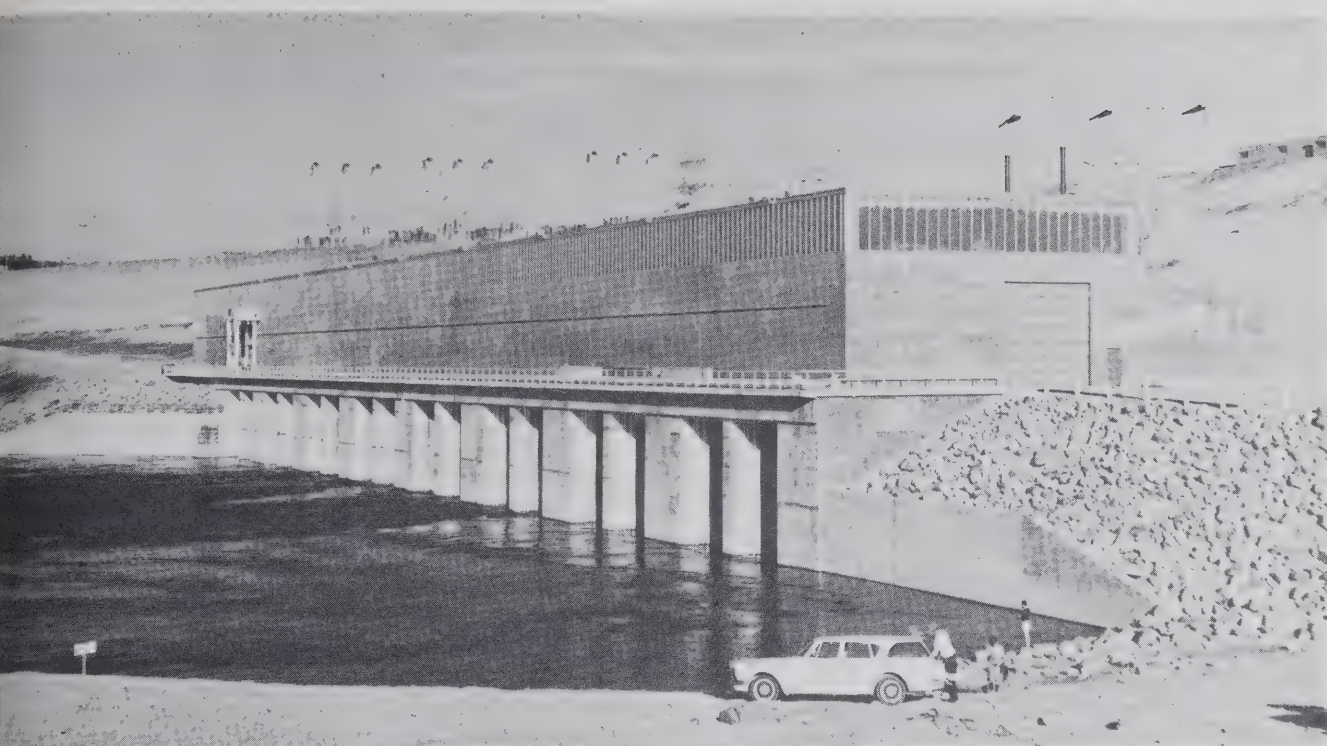
ALBERTA DEPARTMENT OF PUBLIC WORKS

Plans for the installation in 1970 of a new 2,500-kw. steam unit at the Alberta Hospital in Edmonton, were nearing completion. During 1968, a 300-kw. unit was removed from service and scrapped.

Artist's conception of Sundance thermal plant under construction near Wabamun, Alberta.



South Saskatchewan River Project, Saskatchewan, showing spillway structure and control works.



Squaw Rapids hydro station on the Saskatchewan River, Saskatchewan.

Saskatchewan

Saskatchewan's electric power generating capacity increased by 186,600 kw. of hydro capacity in 1968. A total of 400,000 kw. of thermal capacity also was under construction for completion in the period 1969-1971.

SASKATCHEWAN POWER CORPORATION

Construction of the power generating facilities associated with the South Saskatchewan River Project, was completed in 1968. The dam and reservoir for the project were built by the Prairie Farm Rehabilitation Administration for irrigation purposes, but hydro-electric generating facilities were also incorporated. The first of three 62,200-kw. units was brought into service in September, the second in November and the final unit in December.

Installation of two 150,000-kw. steam units at the Boundary Dam thermal station at Estevan is under way. These units, scheduled for commissioning in 1969 and 1970, will be fuelled with lignite coal from the Estevan coal fields. When completed, the total installed capacity at the station will be raised to 432,000 kw. in four units.

At Saskatoon, a 100,000-kw. natural gas-burning steam unit will be added to the existing 132,000-kw. Queen Elizabeth plant. The new unit is scheduled for initial service in 1971.

During 1968, the 121-mile, 138-kv. line linking the Boundary Dam thermal plant with the power system in Manitoba was raised to 230-kv. capacity. A total of 53.5 miles of 138 kv.-line and another 36.2 miles at 72 kv. were under construction during the year.

A 150-mva. terminal station was installed at Boundary Dam to serve the interconnection with Manitoba. At Coteau Creek, transformers to raise the voltage to 138 kv. were installed. Two smaller substations were erected at Tanigan and Prairie Rivers.

ELDORADO NUCLEAR LIMITED

Field engineering for a hydro-electric development two miles south of the Waterloo Lake Station, has been completed. If approved, the project would consist of an earth-filled dam 600 feet long which would produce a head of approximately 92 feet. Tentative plans call for the installation of two units totalling 11,000 kw. and a two-mile extension of the Company's 66-kv. line. Initially, one unit would be installed, with the second unit being added when required.

Manitoba

Manitoba's electric generating capacity increased during 1968 by 121,900 kw., consisting of 109,250 kw. of hydro capacity and 12,650 kw. of thermal. Another 1.4 million kilowatts of generating capacity is scheduled for installation in future years, most of it at the new Kettle hydro development on the Nelson River.

MANITOBA HYDRO

Manitoba Hydro installed the fourth and final unit at the Grand Rapids hydro station on the Saskatchewan River. This unit, with a capacity of 109,250 kw., raises the plant's total generating capacity to 437,000 kw. Completion of this unit necessitated the installation of an additional 230-kv. transmission circuit from Grand Rapids to the southern system to maintain stability. Energized in 1968, the new line is routed westward to Overflowing River and then southward through Minitonas to the Dauphin-Vermilion Transformer Station, a total of 246 miles. In order to eliminate diesel generation and to accommodate load growth at the Pas, Manitoba Hydro completed construction of a 30-mile, 230-kv. transmission line from Overflowing River to the Pas.

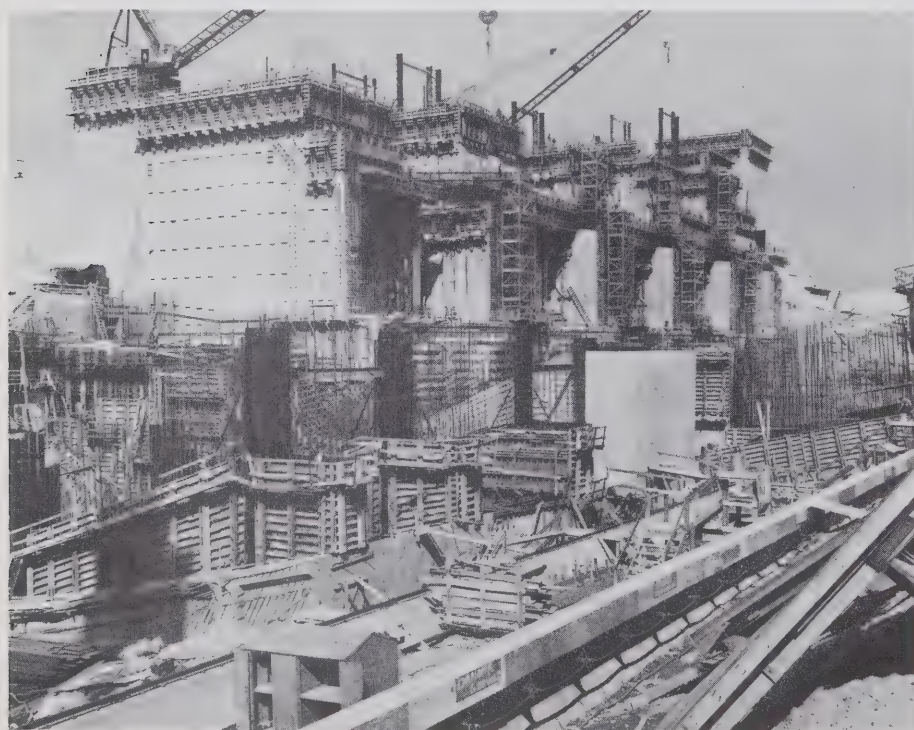
Construction of the Kelsey hydro station in the early 1960's was a first step in the

development of the Nelson River's considerable power potential. The year 1966 saw the start of a co-operative scheme, involving the Governments of Manitoba and Canada, to advance the development of the Nelson River. The scheme, known as "Phase One Development of the Nelson River", will comprise four distinct projects.

The first project entails construction of a twelve-unit generating station at Kettle Rapids on the Nelson River near Gillam. The Kettle hydro station will house 1,219,200 kilowatts of generating capacity, 406,400 kw. of which is expected to be in service by September 1971.

The second and third projects are designed to augment and regulate the natural flow of the Nelson River to increase the potential at power sites on the river. To provide the additional flow, approximately 30,000 cfs from the Churchill River may be diverted via the Rat and Burntwood Rivers to enter the Nelson River immediately downstream from the Kelsey plant, increasing the average Nelson River flow to a level in excess of 100,000 cfs. Flow regulation would be carried out by controlling the outflow of Lake Winnipeg by means of a dam at Warren Landing. The fourth project provides for the transmission of power from Nelson River plants to demand centres in southern Manitoba.

Work during 1968 included subsurface investigations, land clearing, railroad re-routing, cofferdam extension which permitted



The powerhouse construction at the 1,200,000-kw Kettle hydro station on the Nelson River, Manitoba.

excavation of the spillway to begin, and completion of excavation for the saddle dam. Concreting operations in the vicinity of intake structures were very nearly finished in anticipation of diversion of the Nelson River in the summer of 1969. The work force associated with the new project rose to 2,520 in September.

An airborne control survey of the \pm 450-kv. direct current ('dc') transmission line route was completed from Minago River to the Kettle site. Clearing of right-of-way and installation of tower foundations were under way and towers were being erected and conductors strung at different locations along the line. Atomic Energy of Canada Limited (AECL) is managing the construction of the 576-mile line as agent for the Government of Canada. AECL will own the line when it is completed and will lease it to Manitoba Hydro at a rental designed to repay the capital cost, plus interest.

The Nelson River project is one of the largest yet to be undertaken which uses the relatively new technique of high-voltage, direct current transmission. Some aspects of problems such as lightning and over-voltage protection, high speed controls, security of supply and harmonic induction into parallel communication circuits are unique to the project. However, the most complex phase of the work is the planning, design and manufacture of the converter equipment to be contained in the terminal stations, Radisson at the northern end of the line and Dorsey at the southern end.

In addition to converter equipment, the Radisson station will contain 138-kv. 'ac' switching structures and circuit breakers associated with the lines from the Kettle site. The Dorsey station will contain 230-kv. switching structures and circuit breakers to link this major source of electric energy with the existing 230-kv. transmission lines in the southern system of Manitoba Hydro.

Expansion of mining operations at Thompson prompted Manitoba Hydro to commence installation of units Nos. 6 and 7 at the Kelsey generating station on the Nelson River. These units will consist of 42,000-hp. turbines connected to 33,750-kw. generators. Unit No. 6, which is scheduled for service in 1969, will increase the total plant capacity to 202,500 kw. In-service date for Unit No. 7 is not yet firmly scheduled.

To help meet the power demand forecast for the period prior to the date of completion of the Kettle project, the Brandon thermal station is being expanded to include a 105,000-kw., lignite-fuelled steam generator unit. Installation of this unit in 1969 will bring the total capacity of the Brandon station to 237,000 kw. in five units.

The second of two 11,900-kw. gas turbine units installed at the Selkirk thermal station did not come into operation in 1967 as previously reported. The second unit was brought into service late in 1968, raising the capacity at Selkirk to 155,800 kw. in four units.

In accordance with a cost-sharing agreement with the Federal Department of Indian Affairs and Northern Development, Manitoba Hydro installed diesel-electric services consisting of 150 kw. at Moose Lake, Pukatawagan and Oxford House, and 300 kw. at Berens River.

Together with the transmission lines previously mentioned, Manitoba Hydro was constructing a total of 559 miles of transmission line with capacity of 115 - 230 kv. and another 91 miles of 66-kv. line. Substation construction and conversions during 1968 resulted in a net increase of 181,150 kva. at 57 locations, largest of which was the 30,000 kva. Thompson inter-connection.

Ontario

Ontario's electric power generating facilities grew during 1968 by 1,039,900 kw., a record for a single year. Thermal generating capacity accounted for 928,300 kw. and hydro for 111,600 kw. Forecasts for 1969 indicate that 1,000,000 kw. of thermal power and 221,950 kw. of hydro capacity will go into service.

All of the new capacity was installed in plants of the Hydro-Electric Power Commission of Ontario "Ontario Hydro".

The continuing trend towards thermal installation in Ontario is evident in the installation schedule for after 1969 which includes 10,205,000 kw. of thermal capacity compared to 431,300 kw. of hydro capacity.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO

Ontario Hydro's electric power development program involved construction at five hydro stations in 1968 and construction either was in progress or plans were well advanced for installations at five conventional thermal stations and two nuclear-electric plants.

Under construction or extension during 1968 were the Barrett Chute and Stewartville hydro stations on the Madawaska River, Aubrey Falls and Wells stations on the Mississagi River and the Lower Notch station on the Montreal River. The conventional thermal plants involved in the 1968 program were Lakeview station near Toronto, Thunder Bay station at Fort William, Lambton station near Sarnia, Nanticoke station in the Niagara Region and Bath station near Kingston. The Nuclear-electric stations were Pickering station near Toronto and the new Bruce station adjacent to the existing Douglas Point nuclear station on the shore of Lake Huron.

Hydro-Electric Development: At Barrett Chute, the total generating capacity was raised to 152,400 kw. in 1968 following installation of two units, each with generators rated at 55,800 kw. and turbines at 84,000 hp. The extension of this plant more than triples the original installation of 40,800 kw. in two units.

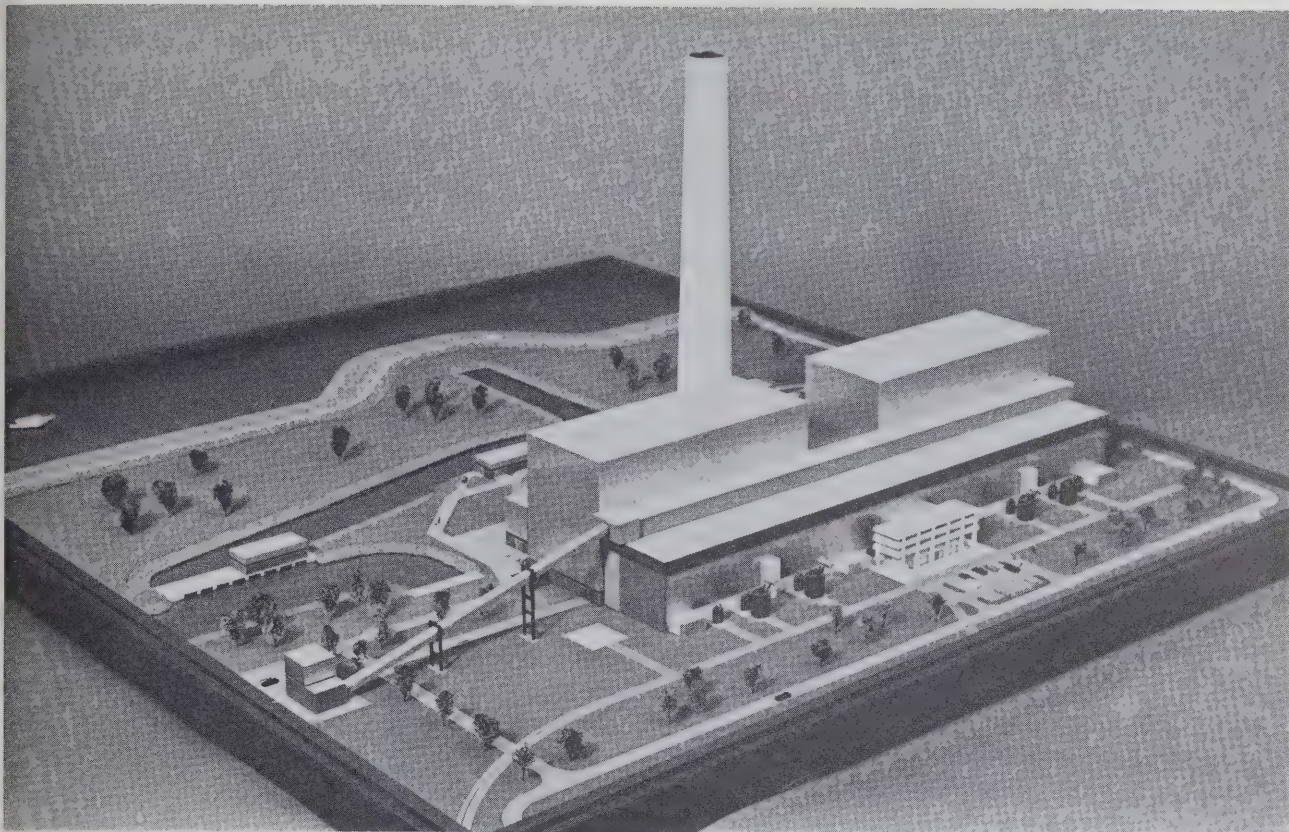
Stewartville hydro station on the Madawaska River, downstream from Barrett Chute, is being extended to house two additional units, each consisting of a 45,900-kw. generator and 68,000-hp. turbine. The additional units will raise the generating capacity at Stewartville to 153,000 kw. from the present total capacity of 61,200 kw. in three units.

Construction at the Aubrey Falls hydro development, on the Mississagi River, northeast of Sault Ste. Marie, is well under way. The station is designed to house two 65,075-kw. generators driven by turbines rated at 100,000 hp.; the in-service date is late 1969.

Hydro development was initiated in 1967 at the Wells site on the Mississagi River, and at Lower Notch on the Montreal River. The Wells station will share a common forebay with the George W. Rayner Station which is only 1,000 feet to the east. The new station will accommodate two 150,000-hp. turbines driving 101,650-kw.

Aerial view of Lakeview thermal station on the outskirts of Metropolitan Toronto.





Model of proposed 2,000,000-kw. Nanticoke thermal station scheduled for completion in 1974 near Port Dover, Ontario.

generators and is scheduled for completion in 1970. The Lower Notch station, with a total turbine capacity of 340,000 hp. and a corresponding generating capacity of 228,000 kw. in two units, is scheduled for service in 1971. The Montreal River falls 320 feet between Bay Lake at Latchford and Lower Notch at the mouth of Lake Timiskaming. At present, four small stations utilize 150 feet of this fall. Once the 180-foot-high Lower Notch dam is completed, however, the entire head will be developed, and the sites of two of the small stations, Fountain Falls and Upper Notch, will be inundated.

On the basis of present economics, there are no undeveloped hydro-electric sites capable of providing sizable amounts of electric energy. However, there are sites that are suitable for the development of low-load factor peaking capacity, particularly by pumping-generating installations, when these are appropriate. Otherwise, further large additions to the Commission's generating resources will have to be thermal-electric stations.

Thermal-Electric Generating Stations: The bringing into service of the final three 300,000-kw. units at the Lakeview station and

the installation of two 14,150-kw. combustion turbine units at Fort William were instrumental in achieving the record-high installation rate in the province's electric generating facilities.

Conventional Thermal Stations: Construction of the last three of eight 300,000-kw. units at the Lakeview generating station near Toronto was completed in 1968. The station, which has 30,000 kw. of combustion turbine equipment, now has a total generating capacity of 2,430,000 kw., making it the largest single generating station in Canada.

A program is under way for the installation of combustion-turbine generating units with capacities ranging from 7,500 kw. to over 16,000 kw. at a number of existing generating and transformer stations. The units, installed in both the East and West Systems, will supply power which may be used either for peak or base-load as operating conditions dictate. At the thermal-electric generating stations, the units will be directly connected to the station-service bus. The quick-starting ability of these units will be used to good advantage for the restoration of station service in the event of a power interruption. During 1968, 28,300 kw.



*Construction at the
2,000,000-kw. Lambton
thermal station near
Sarnia, Ontario.*



*This five story tall,
550-ton stacker-reclame
is ready to stock the
coal bunkers at the
Lambton thermal station.*

in two units was brought into service in the Thunder Bay station at Fort William.

At the Lambton thermal station, 14 miles east of Sarnia, two 500,000-kw. steam units are scheduled for initial service in 1969; two other units are expected to come into service in 1970 to complete the station.

Site investigation for the Nanticoke coal-fuelled thermal-electric station on the north shore of Lake Erie, was completed. The schedule for the new station calls for the installation of four 500,000-kw. units, one unit in each year 1971-74. Another coal-fuelled station will be built at a site on Lake Ontario near Bath, about 22 miles west of Kingston. It will consist of four 500,000-kw. units, one scheduled for service in 1974 and all four by 1977.

Nuclear Electric Generating Stations: The Pickering Nuclear Power site, east of Metropolitan Toronto, is designed for four 540,000-kw. units. The station is being financed jointly by Ontario Hydro and the Governments of Ontario and Canada. It is being built by Ontario Hydro with Atomic Energy of Canada Limited co-operating in the design of components associated with the nuclear reactors. Contracts for most of the equipment for the four units have been awarded. Two units are scheduled for service in 1971, followed by single units in 1972 and 1973. Six combustion turbine units with a combined capacity of 45,000 kw. are scheduled for service in 1970-71 at Pickering.

A new nuclear station is scheduled to be built on Lake Huron, near Port Elgin, on a site adjacent to the 200,000-kw. Douglas Point station. To be known as Bruce Generating station, the new station will house four 750,000-kw. units, one for service by 1975, and the remainder for service by 1978. The nuclear reactors will be of the CANDU type, of the same general family as reactors now being built or in operation in Canada.

Transformer Stations: Additional capacity on the 230-kv. network has been installed at Armitage Transformer Station north of Toronto, Havelock Transformer Station east of Peterborough, and at Cooksville, Marathon, Muskoka, Oshawa-Wilson and Sarnia-Imperial stations. Further additions are being constructed for service in 1969 at Agincourt, A.W. Manby, E.V. Buchanan, Hanover, Orangeville and Windsor-Lauzon stations. On the 115-kv. network, major additions in 1968 were at Guelph-Cedar, Hamilton-Elgin, Kapuskasing, Kingston-Gardiner, London-Nelson, Meaford, Owen Sound, Sarnia-Vidal, Toronto-Duplex, Toronto-Teraulay, Wallaceburgh and Wawa stations.

Electric Power Transmission: The total mileage of transmission lines in service was increased by 447 circuit miles to 19,939 circuit

miles, slightly more than half the increase being in 230-kv. transmission. The most significant additions were double-circuit, 230-kv. lines from Lambton Generating Station to Chatham Switching Station (approximately 37 miles), from Algoma Transformer Station to Mississauga Transformer Station (approximately 36 miles), and from Wawa Transformer Station to Marathon Transformer Station (approximately 105 miles). The latter line is operating initially at 115 kv.

Progress continues on construction of the facilities required for a 230-kv. link between Ontario Hydro's east and west systems. In 1970, the line will provide a direct connection between power utilities from Saskatchewan to Quebec. Apart from its economic savings, the ready exchange of power between the systems in Ontario will help to make Northwestern Ontario less dependent upon the rainfall so vital to the large amount of hydro-electric generation in the western system.

Quebec

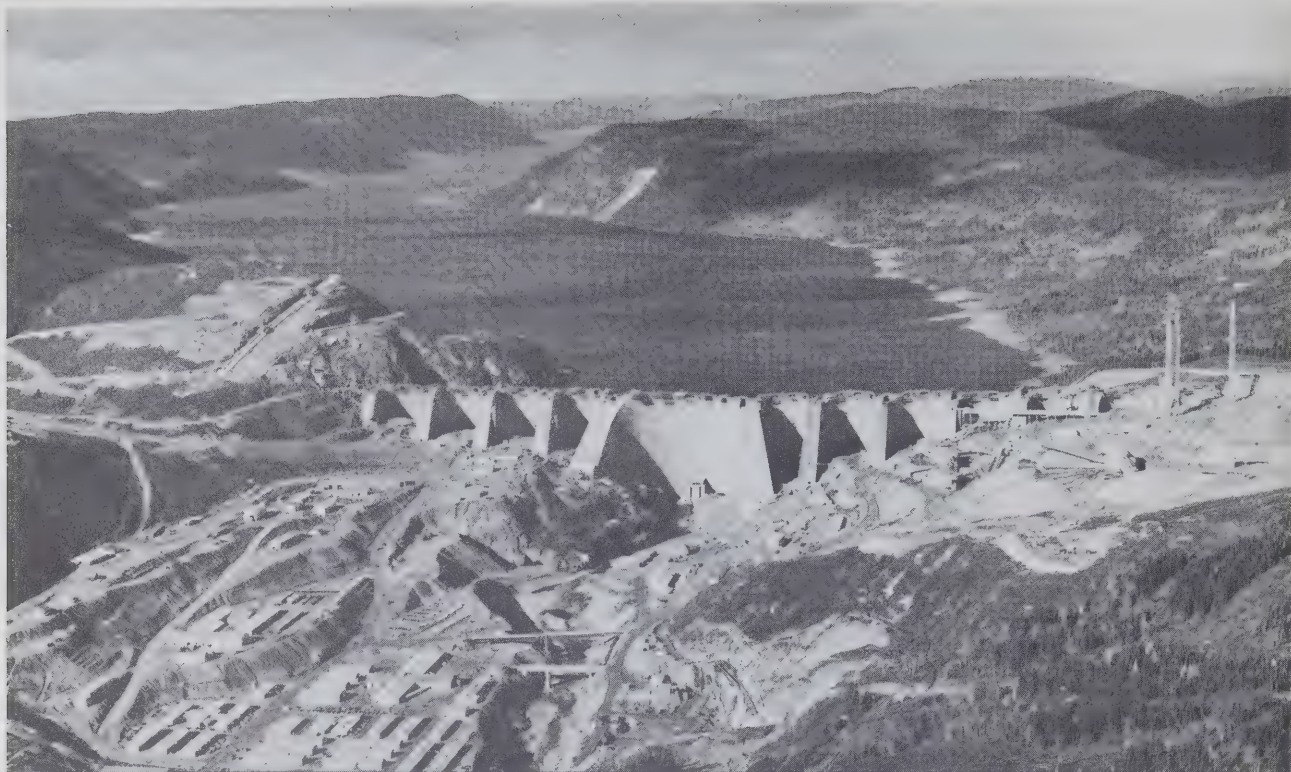
Quebec's extensive program of development of electric power generating facilities added a further 196,660 kw. of new capacity in 1968 to raise the province's total installed capacity to almost twelve million kilowatts. Hydro accounted for only 41,000 kw. of the new capacity and thermal for 155,660 kw. A total of 1,438,800 kw. of new capacity is scheduled for 1969, all of which will be installed in hydro stations.

On the basis of present scheduling, a total of more than three million kilowatts of new capacity, almost all of it hydro, should come into service during the years 1970 to 1974.

QUEBEC HYDRO-ELECTRIC COMMISSION

Hydro-Electric Projects: In the north-western region of Quebec, the first unit at the Premières Chutes hydro station, located on the Des Quinze River (upper Ottawa River) began operation in November. Two other units with the same rating are scheduled for installation in 1969, one in March and the other in May. Provision has been made for a fourth and final unit but this last unit has not been scheduled.

The former Chaudiere No. 2 hydro-electric station on the lower Ottawa River was extended in 1968 and renamed Hull 2. The extension involved installation of a fourth unit rated at 10,000 kw. and 13,400 hp., raising the total



The Daniel Johnson Dam on the Manicouagan River, Quebec.

rated capacity at the station to 27,280 kw. and 35,900 hp.

One of North America's most spectacular engineering projects, the harnessing of the power potential of the Manicouagan and Outardes Rivers, continued during 1968. The project involves the construction of seven hydro developments on the two rivers and the installation of additional capacity at an eighth development. Two of the seven new hydro stations, the 1,015,200-kw. Manic 2 station and the 184,410-kw. Manic 1 station, were completed in 1967. The extension of the McCormick station also was completed in 1967. Five other new plants are either planned or under construction to increase the installed generating capacity on the two rivers to almost 5.8 million kilowatts.

Construction of Manic 5, the largest development in the Manicouagan-Outardes hydro complex, continued during 1968, with construction of the buttressed, multi-arch dam being completed. Named the Daniel Johnson Dam after the late Quebec premier, the dam is more than 4,000 feet long and rises 703 feet above bedrock, making it one of the highest and most massive dams of its kind in the world. The penstocks, tunnels, surge tank, powerhouse and other architectural work will be completed by 1970. The first three of

a total of eight units, each with a 225,000-hp. turbine and a 165,300-kw. generator, will be installed in 1970, followed by four others in 1971 and the final one in 1972. The Manic 5 reservoir has a capacity of 110,000,000 acre-feet, one-quarter of which is live storage. By the end of 1968, the reservoir was some two-thirds full and increasing according to plan even though releases have been increased to serve the new Manic 2 and Manic 1 stations downstream.

Manic 3 will be the last of the new Manicouagan River developments to come into service. The total generating capacity at Manic 3 will be 1,120,000 kw. in seven units, and the total turbine capacity, 1,505,000 hp. The plant had been scheduled for completion by 1974; however, the projected date of completion has been set back to 1977-78.

Scheduled for completion in 1969 on the Outardes River are Outardes 4 and Outardes 3, each with four units. Outardes 3 with a total generating capacity of 744,800 kw. and a corresponding turbine capacity of 1,034,000 hp. is the larger of the two. Outardes 4 will have a total generating capacity of 632,000 kw. and a total turbine capacity of 864,000 hp. The dam at Outardes 4 will create a reservoir with more than 250 square miles of surface area. The

reservoir which necessitated the building of two large rockfill dams, five smaller earth and a concrete spillway dam, has been impounding water since early 1968.

Adjacent to the existing 50,000-kw. Outardes Falls station is the Outardes 2 station which is scheduled for service in 1976. The new station, which is designed for a total generating capacity of 453,900 kw. in three units will have a total turbine capacity of 612,000 hp. Excavation for the powerhouse was completed and full heading faces for the intakes and the surge tanks were prepared; however, further work on the project has been delayed, as planned, and the probable date for delivery of first power set back to 1976, instead of 1970 as originally scheduled.

Upstream from the Beauharnois hydro-electric plant on the St. Lawrence River, Quebec Hydro has for several years been constructing a series of dammed ponds in the river bed in order to restore in part the water levels that existed before the river was diverted into the Beauharnois canal. Two such dams are complete and work on a third dam was under way.

Quebec Hydro has signed a contract with the Churchill Falls (Labrador) Corporation Limited which, for a period of more than 65 years will ensure that Quebec Hydro will obtain a substantial part of the production from the 5,225,000-kw. station under construction in Labrador, 700 miles northeast of Montreal. Power deliveries are expected to start in 1972 and

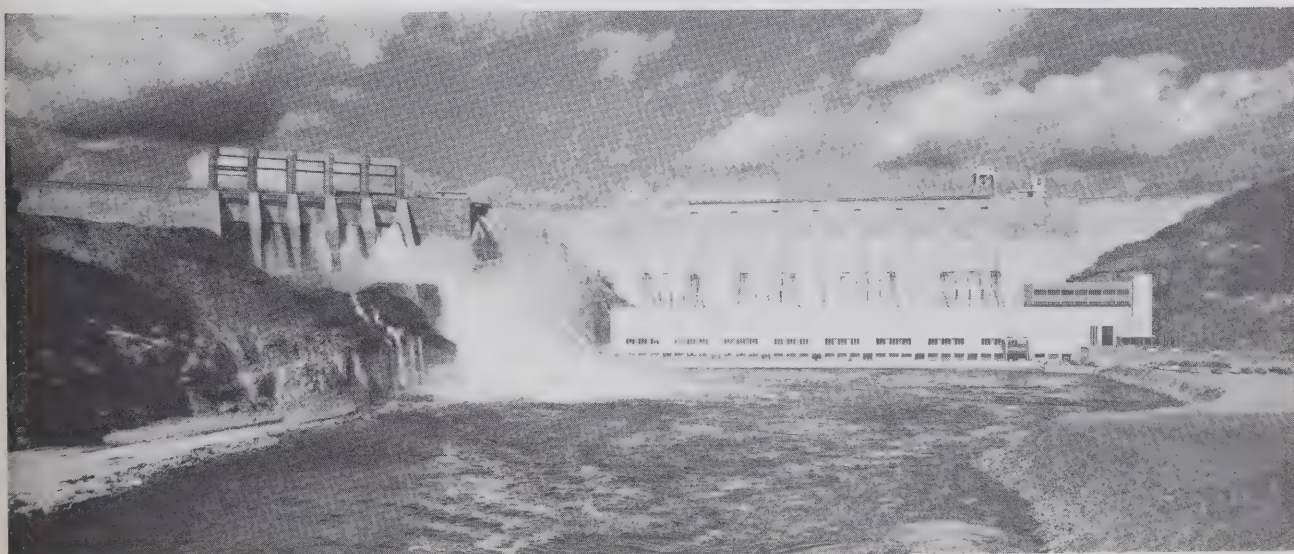
will reach their full annual rate of some 31.5 billion kwh. when the last generating unit is installed in 1976.

The commissioning of the Manic 5 station between 1970 and 1972 together with the delivery of power from Churchill Falls beginning in 1972 will provide Quebec Hydro with a certain amount of reserve power that can be made available to neighboring systems in Ontario and New Brunswick. At the end of December, negotiations to this effect, were in progress.

Under study is a proposed pumping-generating station at Saint-Joachim, on the north shore of the St. Lawrence River, about 30 miles downstream from Quebec. With a head of 1,160 feet and an initial capacity of 1,100,000 kw., the station would use off-peak power received from Churchill Falls to pump water to a higher level for use in generating electricity during peak demands. Studies being conducted indicate that if construction were to get under way in 1973, the plant could be completed to deliver first power in 1977-78.

Following surveys of the Nottaway, Broadback and Rupert Rivers which flow into James Bay, a preliminary report has indicated several methods of developing up to 5,230,000 kw. Studies based on the report were carried out during the year, but on-site investigations were concentrated in the Chute Rouge area and the headwaters of the Rupert River (Lake Mistassini). These studies indicated the possibility of separate development of the most

The 1,015,200-kw. Manic 2 hydro station on the Manicouagan River, Quebec.



southerly part of the complex. The first phase could entail installation of between 190,000 kw. and 300,000 kw. at Chute Rouge, 30 miles northwest of Mattagami. This start would achieve early regulation of a major part of the water in the complex and would provide power for other construction sites.

Studies of the Grande Rivière and Eastmain Rivers, other James Bay rivers, also have been made, but no on-site investigations have been carried out. These two rivers have a combined potential almost equal to that of the Nottaway, Broadback and Rupert complex.

Quebec Hydro has also completed a general study for a 195,000-kw. hydro-electric station to be called Temiscamingue, and to be located between Lake Beauchesne and the Ottawa River. Detailed studies and on-site investigations are continuing for this project which would replace the 17,120-kw. station in service at Kipawa since 1920.

Thermal-Electric Projects: Quebec's enormous water power resources continue to provide almost all the electric energy needed to take care of the province's requirements. However, despite Quebec's almost exclusive dependence upon hydro power, the greater flexibility offered by integrated hydro-thermal operation is leading to a growing interest in the provision of thermal capacity.

In 1968, the fourth and final 150,000-kw. unit was added at Tracy, about 45 miles from Montreal. The addition of this unit brings Tracy's total installed capacity to 600,000 kw. The Tracy plant will continue to supply peak power until hydro power from the Churchill Falls and Manicouagan-Outardes becomes available in greater quantity, at which time Tracy will revert to standby operation.

Two 2,200-kw. units were installed in the Cap-aux-Meules station on Iles-de-la-Madeleine, raising the total generating capacity to 9,665 kw. in seven units. Smaller units were installed or removed from service at various other locations.

Nuclear-Electric Projects: Construction of Quebec's first nuclear generating plant began in 1966. The Gentilly plant at Pointe aux Roches on the south shore of the St. Lawrence River is being built by Atomic Energy of Canada Limited in co-operation with Quebec Hydro engineers. Rated at 250,000 kw., Gentilly, like the Douglas Point station in Ontario, is designed to use natural uranium as fuel and heavy water as the moderator which sustains the chain reaction in the fuel. Douglas Point, however, uses heavy water under pressure as the coolant for the moderator core, whereas, boiling light water is used at Gentilly for simplicity in design and construction. Although the station is scheduled to be commissioned and will be

capable of delivering first power in 1971, it is not expected to be integrated into the power system until 1973-74, following several years of intensive tests.

Electric Power Transmission: To accomplish delivery of power from Churchill Falls in Labrador, Churchill Falls (Labrador) Corporation will build three 735-kv. lines, each 125 miles long, from Churchill Falls to the delivery point. From there, Quebec Hydro will extend two of these lines to its Manicouagan substation and the third to the Micoua substation. Two new substations, Montagnais - near the delivery point, and Arnaud - near Sept Iles, will be put in service between 1971 and 1974. The lines from Churchill Falls will be integrated with the main 735-kv. network with the result that the system will have to be greatly expanded.

The second 735-kv. line between the Manicouagan substation and the Montreal area was under construction for completion in June 1969. Construction of a 735-kv. line from the Micoua substation to the Montreal area was to start in the spring of 1969; the first section to Quebec City will be operational by mid-1970 and the second section to Montreal, by mid-1971. A 39-mile, 735-kv. tie line between the Manicouagan and Micoua collector stations will go into service in mid-1969.

A total of 39 miles of 315-kv., double-circuit line is under construction to connect the Outardes 3 hydro development to the Manicouagan collector station and the Outardes 4 site with the Micoua collector station. A similar line, 9 miles long, linking Montreal with the south shore of the St. Lawrence River was completed.

Construction has started on a 64-mile, double circuit, 230-kv. link between New Richmond and Chandler to firm up the power supply to the Gaspé region. A similar line, 11 miles long between Gentilly and Larochelle, will be ready in early 1969 to permit testing of the new nuclear station before the station goes into service.

Throughout the province, a total of 203 miles of 120-kv. line and 105 miles of 69-kv. line were erected during the year.

New transformer capacity added to the system in 1968 amounted to 2,184 mva., including a 400-mva. unit in the Lévis substation which feeds the 230-kv. lines in the Gaspé and Centre Quebec regions, and a 600-mva. transformer in the Boucherville substation. In the 315-kv. system, Chomedey and Laprairie each received a 240-mva. transformer. The Sorel substation, on the 230-kv. system, was increased from 100 mva. to 250 mva. while installed capacities at several other lower-voltage systems also were increased.

THE QUEBEC DEPARTMENT OF NATURAL RESOURCES

The Department contributes to the production of hydro-electric energy by operating sixteen storage reservoirs to regulate the flow of the Du Nord, Chicoutimi, Au Sable, Du Loup, St. Francois and Du Lièvre Rivers.

OGILVIE FLOUR MILLS COMPANY LIMITED

In January, the Company removed from service its 3,000-kw. hydro-electric plant on the Lachine Canal. In its place, a 7,500-kva. substation has been erected and all power is now purchased from Quebec Hydro.

CITY OF SHERBROOKE

During 1968, the City's new Frontenac substation, consisting of a 3,750-kva. unit, was completed and a 3,000-kva. unit was added to the Rand substation.

A 5.2 mile, 12-kv. transmission line was completed, linking the St. Francis terminal with the St. Hubert substation.

New Brunswick

New Brunswick's total electric generating capacity was increased in 1968 by a total of

300,700 kw. of hydro capacity. Another 300,000 kw. of hydro capacity will be installed over subsequent years.

A new thermal plant which may ultimately have a total generating capacity of 500,000 kw. is scheduled for initial service in 1969, when a 100,000-kw. unit is to be energized.

NEW BRUNSWICK ELECTRIC POWER COMMISSION

The initial stage of construction at the Commission's Mactaquac hydro-electric development on the Saint John River was completed in 1968. The first 100,000-kw. unit had been scheduled for service late in 1967 but it was in 1968 when the first unit went on line, followed shortly by two others. The development is designed for a total of six units with a total generating capacity of 600,000 kw. and a corresponding turbine capacity of 840,000 hp. Units 4, 5 and 6 will be added when required. Power from the Mactaquac station is transmitted to the Bathurst terminal via a 130-mile, 230-kv. line which currently is operating at 138 kv.

Mactaquac, or Big Branch, was the name given by the Maliseet Indians to a stream which joins the Saint John River at the site of the new development about 14 miles above Fredericton. The dam at Mactaquac creates a lake about 59 miles long, the largest in New Brunswick. The project provides new water-oriented activities not previously available.

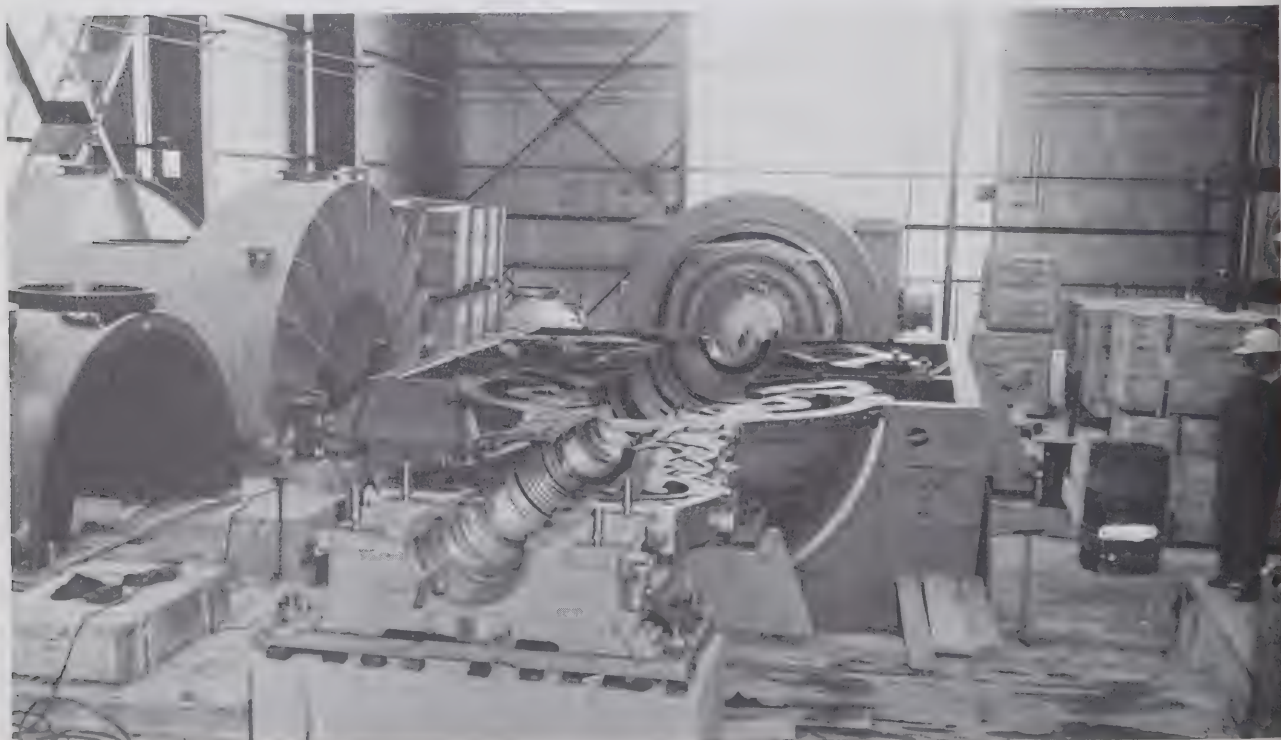
Because the Saint John River is a major salmon river, the Commission in full cooperation with the Federal Department of Fisheries has included a number of interconnected pools in the development's design into which the fish are attracted and held and from which the fish can

The Mactaquac hydro station on the Saint John River, New Brunswick.





Exterior and interior views of the Dalhousie thermal station on Chaleur Bay, New Brunswick.



be sorted and moved by tank truck to the headpond or other locations.

A 700-kw. unit was installed in 1968 at the Milltown hydro development on the St. Croix River. This unit boosts the installed capacity at Milltown to 4,136 kw. in six units.

A 100,000-kw. unit in a new thermal station near Dalhousie on Chaleur Bay is under construction for operation in July 1969. Ultimately the station's capacity could rise to 500,000 kw.

A 17-mile, 138-kv. transmission line from Morell to Tinker was brought into service and the tie-line with Quebec from Eel River to Sillandsville was raised from 69 kv. to 138 kv. Several 69-kv. transmission lines were brought into service, including a 20-mile line from Eel River to Campbellton, a 17-mile section from Iroquois to the border with the United States and a 13-mile line from Acamac to Courtenay Bay. At Edmundston, the first stage of a 69-kv. terminal was brought on line.

Nova Scotia

Normal load growth in industry and the construction of heavy water plants at Glace Bay and Point Tupper are placing great demands upon existing utilities. The net total of 11,000 kw. of hydro capacity completed in 1968 will meet this in part; however, the 230,000 kw. of thermal capacity scheduled for 1969 will increase the province's generating capacity by more than 30 per cent and will ensure sufficient capacity over the short-term.

NOVA SCOTIA LIGHT AND POWER COMPANY LIMITED

Construction of the Company's hydro-electric plant on the Allain River near Lequille, was completed in 1968. The plant houses a 15,000-hp. turbine connected to an 11,200-kw. generator. Built as a centennial project, the exterior of the station has a design similar to Canada's first grist mill which was built on the site in 1606 by Poutrincourt (see cover).

A small hydro station at Lequille, consisting of a 300-hp. turbine and 200-kw. generator, was dismantled in May.

Extension of the Company's main transmission line network will increase by 43 miles of 138-kv. line in 1969 when the line between Sackville and Hells Gate is completed.

NOVA SCOTIA POWER COMMISSION

The thermal station capacity at Trenton will be increased to 210,000 kw. in 1969 when the 150,000-kw. unit currently under construction is scheduled to be completed.

At Point Tupper, a single unit, 80,000-kw. thermal station is under construction for initial service in 1969. This unit will supply electrical and steam requirements for the Canadian General Electric heavy water plant being constructed nearby.

A 69-kv. transmission line, 10.1 miles long, was completed between Oyster Pond and Musquodoboit Harbour. Still under construction at year's end was 45 miles of 138-kv. line and another 116 miles at 69-kv.

Eighteen substations ranging in size from 1mva. to 141mva. were under construction during the year.

The Allain River hydro station near Lequille, Nova Scotia.





Churchill Falls on the Churchill River in Labrador.

Newfoundland

Newfoundland's total generating capacity was increased by 138,900 kw. in 1968, 123,300 kw. at hydro stations and 15,600 kw. at thermal stations. Hydro capacity totalling 76,500 kw. is scheduled to be placed in service in 1969 while another 5,301,500 kw. of hydro capacity and 300,000 kw. of thermal capacity are scheduled for service by 1976, representing an increase over the present installed capacity of some 600 per cent.

NEWFOUNDLAND AND LABRADOR POWER COMMISSION

The Commission installed the fourth unit at its Bay d'Espoir hydro-electric station on the Salmon River. This is the first unit to be installed in the second stage of development. The second stage, which deals with construction of diversion dams and canals for the White Bear, Grey Lloyds and Victoria River watersheds, will ultimately make it possible to realize a total of 459,000 kw. in six units. The final two units are scheduled for installation in December 1969 and February 1970. The possibility of future hydro development on the Upper Salmon and Terra Nova Rivers is under study.

A 117-mile, 230-kv. line paralleling an existing line from the Bay d'Espoir station to the main Western Avalon terminal at Sunnyside was completed; still under construction at year's end were 60 miles of 230-kv. line between Western Avalon and St. John's, 55 miles of 69-kv. line between Western Avalon and Trepassy and 55 miles at 138-kv. between Grand Falls and Gander.

At coastal settlements eight new diesel plants ranging in size from 120 kw. to 400 kw. were brought on line, the capacities at twelve others were raised by 60 kw. to 100 kw. and eight other plants were shut down as the rural electrification program replaced them as the main source of electric energy. A total of 85.75 miles of rural distribution line and 27 small substations were brought into service during the year.

A steam plant consisting of two 150,000-kw. units is under construction for commissioning in 1970 and completion in 1971 at Holyrood. This plant will more than treble the total thermal capacity in the Province.

CHURCHILL FALLS POWER CORPORATION

The Churchill Falls hydro station on Churchill River in Labrador is destined to rank as one of the world's largest single hydro developments. Under a net head of 1,025 feet and a controlled discharge of some 49,000 cfs, the station will consist of eleven units with a total generating capacity of 5,225,000 kw. and a corresponding turbine capacity of 7,000,000 hp. First power is expected to be available in 1972 with completion of the entire plant in 1976.

A formal contract with Quebec Hydro ensures that Quebec Hydro will buy virtually all of the power produced for a period in excess of 65 years. Power deliveries will start when the first unit comes into service in 1972, and will reach the full rate of about 31.5 billion kwh. per year in 1976 when the entire station is in service.

Transmission from Churchill Falls to the Quebec boundary will be at 735 kv. Clearing contracts for the right-of-way for three separate tower circuits has been let.

TWIN FALLS CORPORATION LIMITED

The Corporation installed a fifth and final unit at its Twin Falls hydro station increasing the plant's total generating capacity to 234,000 kw.

The transmission lines serving the station consist of two 230-kv. lines, 110-miles long, to Wabash Lake and one 32-mile, 66-kv. circuit to the Churchill Falls Development site. This latter circuit is being extended to several key control points on the Churchill Falls reservoir.

NEWFOUNDLAND LIGHT AND POWER COMPANY LIMITED

A single unit, 14,400-kw. gas turbine station was installed in December at Salt Pond, on Burin Peninsula.

Thirteen miles of 66-kv. transmission line were installed between Bottom Brook and Stephenville and another two miles within the city of St. John's. Six large substations were constructed during 1968, six others were extended and one station remained under construction at the end of the year.

BOWATER POWER COMPANY LIMITED

In 1968, the Company installed 18 miles of 138-kv. transmission line between Deer Lake and Howley.

Prince Edward Island

Expansion of industries coupled with normal customer growth resulted in an increase in demand for electric energy in the province. To meet this growth, a total of 20,000 kw. of thermal power was installed during the year, the first new capacity in the province since 1963.

MARITIME ELECTRIC COMPANY LIMITED

A 20,000-kw. addition to the Company's thermal station at Charlottetown was completed in October, raising the station's capacity to 70,500 kw. in seven units.

A 2-mva. substation at Souris and nine miles of 69-kv. transmission line from Dingwells Mills to Souris were brought into operation during the year.

Yukon and Northwest Territories

During 1968, Whitehorse in the Yukon was the area of greatest activity in electric generating capacity installation.

Altogether, 12,375 kw. of thermal capacity was installed throughout the Territories while another 19,500 kw., including 8,000 kw. of hydro, is scheduled for installation in 1969 or later.

NORTHERN CANADA POWER COMMISSION

At Whitehorse, in Yukon Territory, the Commission installed two diesel units with generating capacities totalling 9,100 kw., and proposes to install a further 10,000 kw. for operation in 1970. The largest of the two new diesel units is rated at 5,150 kw., the highest rating of any diesel-electric unit in Canada. At its Whitehorse Rapids Station on the Yukon River, the Commission is installing an 8,000-kw. hydro unit which in 1969 will raise the station's total capacity to 19,390 kw. in three units. The Commission's 750-kw. diesel station at Dawson City is expected to be extended in 1970 by approximately 500 kw.

In the Northwest Territories, the Commission activated a new 750-kw. gas turbine plant at Norman Wells and a 400-kw. diesel plant at Chesterfield Inlet; smaller capacities were added at Cambridge Bay, Aklavik and Fort Resolution, raising the capacities at the respective locations to 950 kw., 720 kw. and 450 kw. Sizable increases of 5,000 kw. and 2,500 kw. are projected for Yellowknife and Frobisher Bay respectively in 1969, and a 2,000-kw. increase is expected to occur in 1970 at Inuvik where the existing capacity is 4,500 kw. in seven units.

THE YUKON ELECTRICAL COMPANY

The Company installed a 600-kw. diesel unit at Whitehorse, raising the total capacity at that location to 1,800 kw. At Watson Lake, Stewart Crossing, Pelly Crossing, Carmacks and at the Venus Mine, new capacities totalled 1,300 kw., but a corresponding total of 550 kw. was removed from service, resulting in a net total gain of only 750 kw.

During the year, the Company raised from 25 kv. to 34.5 kv. the capacity of its

50-mile line to Carcross. A new substation at Carcross was constructed and the capacity at the Porter Creek substation was increased. Six miles of 2.4-kv. line was installed between Carmacks and Mount Berdoe.

NORTHLAND UTILITIES

The Company had a very small increase in capacity during 1968 as a result of a net decrease of 100 kw. at Hay River and a net increase of 150 kw. at Fort Providence.

TABULAR SUMMARY - HYDRO

DEVELOPMENT	RIVER	HYDRO-ELECTRIC CAPACITY												REMARKS				
		INSTALLED DURING 1968				TOTAL STATION CAPACITY AT END 1968				PROPOSED FOR INSTALLATION								
		No. of Units		Total Turbine Capacity hp.		Total Generator Capacity kw.		Turbine hp.		Generator kw.		No. of Units			Total Turbine Capacity hp.		Total Generator Capacity kw.	
		No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.	Turbine hp.	Generator kw.	No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.	No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.						
British Columbia																		
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY																		
Gordon M. Shrum	Peace	3	930,000	681,000	930,000	681,000	2	620,000	454,000	5	1,550,000	1,135,000	Unit 6 scheduled for 1971; units 7 and 8 for 1972					
Strathcona	Campbell	1	42,000	33,750	84,000	67,500							The small existing plant will be replaced by a 150,000-kw. peaking plant in 1971.					
Jordan River	Jordan				38,985	26,400				1	220,000	150,000	Six small turbines with capacities totalling 12,000 hp. were replaced with three turbines totalling 18,000 hp. (the turbines are connected directly to mechanical equipment).					
CROWN ZELLERBACH CANADA LTD.																		
Ocean Falls	Link	3	18,000	Mech	34,800	12,200							The plant with a total generating capacity of 900 kw. was dismantled.					
COMINCO LTD.																		
Brilliant	Kootenay	1	40,000	27,200	151,000	108,800												
CITY OF REVELSTOKE																		
Illecillewaet	Illecillewaet																	
TOTAL			1,030,000	741,950	(new capacity)			620,000	454,000		1,770,000	1,285,000						
				900	(removed from service)													
				741,050	(net increase)													

Yukon

NORTHERN CANADA POWER COMMISSION													
Whitehorse Rapids	Yukon		15,000	11,390	1	11,000	8,000						
TOTAL						11,000	8,000						

SASKATCHEWAN POWER CORP.									
Coteau Creek	South Saskatchewan	3	252,000	186,600	252,000	186,600			
ELDORADO MINING AND REFINING LIMITED									
	Charlot						2	15,200	11,000
TOTAL			252,000	186,600				15,200	11,000

MANITOBA HYDRO		1	150,000	109,250	600,000	437,000						
Grand Rapids	Saskatchewan											
Kettle	Nelson											
Kelsey	Nelson				210,000	168,750	1	42,000	33,750	1	42,000	33,750
TOTAL			150,000	109,250				42,000	33,750		1,722,000	1,252,950

ONTARIO HYDRO												
Barrett Chute	Madawaska	2	168,000	111,600	224,000	152,400						
Wells	Mississagi											
Stewartville	Madawaska				84,000	61,200	2	136,000	91,800	2	300,000	203,300 Both units scheduled for service in 1970.
Lower Notch	Montreal											
Aubrey Falls	Mississagi						2	200,000	130,150	2	340,000	228,000 Both units scheduled for service in 1971.
TOTAL			168,000	111,600				336,000	221,950		640,000	431,300

[illegible]

DEVELOPMENT		RIVER	HYDRO-ELECTRIC CAPACITY										REMARKS
			INSTALLED DURING 1968		TOTAL STATION CAPACITY AT END 1968		PROPOSED FOR INSTALLATION						
							IN 1969			AFTER 1969			
No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.	No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.	No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.	No. of Units	Total Turbine Capacity hp.	Total Generator Capacity kw.		
QUEBEC (Cont.)													
QUEBEC HYDRO (Cont.)													
Outardes 3		Outardes				4	1,034,000	744,800					
Outardes 2		Outardes							3	612,000	453,900		
Hull 2	1	Ottawa	13,400	10,000	35,900	27,280							
TOTAL			53,400	41,000			1,978,000	1,438,800		3,925,000	2,927,300		
SCHEDULED FOR SERVICE IN 1976.													
New Brunswick													
NEW BRUNSWICK ELECTRIC POWER COMMISSION													
Mactaquac	3	Saint John	420,000	300,000	420,000	300,000			3	420,000	300,000		
Milltown	1	St. Croix	900	700	5,608	4,136							
TOTAL			420,900	300,700						420,000	300,000		
Nova Scotia													
NOVA SCOTIA LIGHT AND POWER COMPANY LIMITED													
Lequille	1	Allain	15,000	11,200									
TOTAL			15,000	11,200	(new capacity)								
	300	200			(removed from service)								
	14,700	11,000			(net increase)								
Older plant of 300 hp. and 200-kw. dismantled in May 1968.													
Newfoundland													
NEWFOUNDLAND AND LABRADOR POWER COMMISSION													
Bay d'Espoir	1	Salmon	100,000	76,500	400,000	306,000	1	100,000	76,500	1	100,000	76,500	
Sixth and final unit for service in 1970.													

TWIN FALLS POWER COMPANY LIMITED											
Twin Falls	Unknown	1	60,000	46,800	300,000	234,000					
CHURCHILL FALLS POWER CORPORATION LTD.											
Churchill Falls	Churchill								11	7,000,000	5,225,000
TOTAL			160,000	123,300				100,000	76,500	7,100,000	5,301,500
First power scheduled for delivery in 1972 and completion of the entire development by 1976.											
NET TOTAL FOR Canada			2,248,100	1,624,500				3,087,000	2,233,000	15,592,200	11,509,050

TABULAR SUMMARY - THERMAL

DEVELOPMENT	TYPE	THERMAL-ELECTRIC CAPACITY							REMARKS	
		INSTALLED DURING 1968		TOTAL STATION CAPACITY AT END 1968 kw.	PROPOSED FOR INSTALLATION			Total Capacity kw.		
		No. of Units	Total Capacity kw.		No. of Units	Total Capacity kw.	No. of Units			
<i>British Columbia</i>										
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY										
Burrard	S	1	162,000	810,000			1	162,000	Ultimate capacity 972,000 kw.	
Mica Creek	IC		6,000	11,175					Two 3,000-kw. units transferred from Prince George.	
Golden	IC	2	3,000	3,000						
Bella Coola	IC	1	500	1,557						
Wells	IC	1	300	300						
GRANDUC OPERATING COMPANY										
Tide Lake		2	30,000	30,000				2,300	A total of 2,300-kw. standby diesel power proposed for installation.	
TOTAL			201,800	(new capacity)				164,300		
			6,000	(dismantled and transferred)						
			195,800	(net increase)						

Northwest Territories

NORTHERN CANADA POWER COMMISSION									
Norman Wells	IC	2	750		750				
Chesterfield Inlet	IC	3	400		400				
Cambridge Bay	IC	1	350		950				
Aklavik	IC	1	250		720				
Fort Resolution	IC	1	200		450				
Yellowknife	IC			1	-	5,000			One 75-kw. unit removed from service.
Frobisher Bay	IC & GT			1	3,960	2,500			
Inuvik	IC								2,000
Various Locations	IC			4		1,000			1,000

NORTHWEST TERRITORIES (Cont.)

NORTHLAND UTILITIES									
Hay River	IC	500	2,700						Two 300-kw. units removed from service.
Fort Providence	IC	225	405						One 75-kw. unit removed from service.
TOTAL		2,675	(new capacity)				8,500		
		750	(removed from service)						
		1,925	(net increase)					3,000	

Yukon

THE YUKON ELECTRICAL COMPANY									
Various Locations	IC	1,300							Four units totalling 550 kw. removed from service.
Whitehorse	IC	600	1,800						
NORTHERN CANADA POWER COMMISSION									
Whitehorse	IC	9,100	9,100					10,000	Scheduled for operation in 1970.
Dawson City	IC		750					500	
TOTAL		11,000	(new capacity)					10,500	
		550	(removed from service)						
		10,450	(net increase)						

Alberta

CANADIAN UTILITIES LIMITED									
Rainbow Lake	GT	1	30,000	30,000					Unit transferred from Vermilion plant.
Fort McMurray	IC	2	3,150	7,050					A 2,500-kw. unit was transferred from Grande Prairie; several small units totalling 725 kw. dismantled.
Various Locations	IC		1,195						Capacities totalling 1,775 kw. dismantled.
Battle River	S			66,000		150,000			
NORTHLAND UTILITIES LIMITED									
Various Locations	IC		1,525						Capacities totalling 365 kw. dismantled.
Jasper	IC		500	3,825					
PAN AMERICAN PETROLEUM CORPORATION									
West Whitecourt	IC		1,600	1,600					
Ante Creek	IC		200	200					

S - Steam, IC - Internal Combustion, GT - Gas Turbine, N - Nuclear, CT - Combustion Turbine

THERMAL

DEVELOPMENT	TYPE	THERMAL-ELECTRIC CAPACITY						REMARKS
		INSTALLED DURING 1968		TOTAL STATION CAPACITY AT END 1968 kw.	PROPOSED FOR INSTALLATION			
		No. of Units	Total Capacity kw.		IN 1969	After 1969	Total Capacity kw.	
ALBERTA (Cont.)								
CANADIAN SUGAR FACTORIES								
Picture Butte	S		750	2,750				
CALGARY POWER LTD.								
Sundance (nr. Wabamun)	S							Scheduled for operation in 1971.
CITY OF EDMONTON								
Clover Bar (Edmonton)	S						2	330,000
ALBERTA DEPARTMENT OF PUBLIC WORKS								The first unit scheduled for service in 1970, the second in 1973.
Alberta Hospital (Edmonton)	S			1,300			1	2,500
TOTAL			38,920 (new capacity)		150,000			632,500
			35,665 (dismantled or transferred)					
			3,255 (net increase)					
Saskatchewan								
SASKATCHEWAN POWER CORPORATION								
Boundary Dam (Estevan)	S			132,000	1	150,000	1	150,000
Queen Elizabeth (Saskatoon)	S			132,000			1	100,000
TOTAL						150,000		250,000
Manitoba								
MANITOBA HYDRO								
Selkirk	S & GT	1	11,900	155,800				
Various Locations	IC	8	750					
Brandon	S			132,000	1	105,000		
TOTAL			12,650			105,000		

Installed under a cost sharing agreement with the Department of Indian Affairs and Northern Development.

Ontario

ONTARIO HYDRO										
Lakeview (Toronto)	S & CT	3	900,000	2,430,000						
Thunder Bay	S & CT	2	28,300	128,300						
Lambton (Sarnia)	S & CT			30,000	2	1,000,000	2	1,000,000		Scheduled for completion in 1970.
Nanticoke (Niagara region)	S						4	2,000,000		One unit for service in each year, 1971-74.
Pickering	N & CT						-	2,205,000		Two 540,000-kw. units for service in 1971; single units in 1972 and 1973. Six combustion turbine units with combined capacity of 45,000 kw. for service in 1970-71.
Bath (nr. Kingston)	S							2,000,000		Scheduled for completion in 1975.
Douglas Point	N							3,000,000		Scheduled for completion in 1976.
TOTAL			928,300			1,000,000		10,205,000		

Quebec

QUEBEC HYDRO										
Tracy (Sorel)	S	1	150,000	600,000						
Gentilly	N								1	Scheduled for operation in 1971. Full operation not expected until 1973-74 following extensive testing.
Cap-Aux-Meules	IC		4,400	9,665						Installed in small diesel plants.
Various Locations	IC		1,260							
TOTAL			155,660					250,000		

New Brunswick

NEW BRUNSWICK ELECTRIC POWER COMMISSION										
Dalhousie	S				1	100,000				Ultimate plant development may reach 500,000 kw.
TOTAL						100,000				

S - Steam, IC - Internal Combustion, GT - Gas Turbine, N - Nuclear, CT - Combustion Turbine

DEVELOPMENT	TYPE	THERMAL-ELECTRIC CAPACITY							REMARKS
		INSTALLED DURING 1968		TOTAL STATION CAPACITY AT END 1968 kw.	PROPOSED FOR INSTALLATION			Total Capacity kw.	
		No. of Units	Total Capacity kw.		IN 1969	AFTER 1969	No. of Units		

Nova Scotia

NOVA SCOTIA POWER COMMISSION								
Trenton	S			60,000	1	150,000		
Point Tupper	S				1	80,000		
TOTAL						230,000		

Newfoundland

NEWFOUNDLAND AND LABRADOR POWER COMMISSION								
Holyrood	S						2	300,000
NEWFOUNDLAND LIGHT AND POWER COMPANY LIMITED								One unit for service in each year, 1970-71.
Salt Pond	GT	1	14,400					
Various Locations			1,200					Expansion at small thermal units in coastal settlements.
TOTAL			15,600					300,000

Prince Edward Island

MARITIME ELECTRIC COMPANY								
Charlottetown	S	1	20,000	70,000				
TOTAL			20,000					

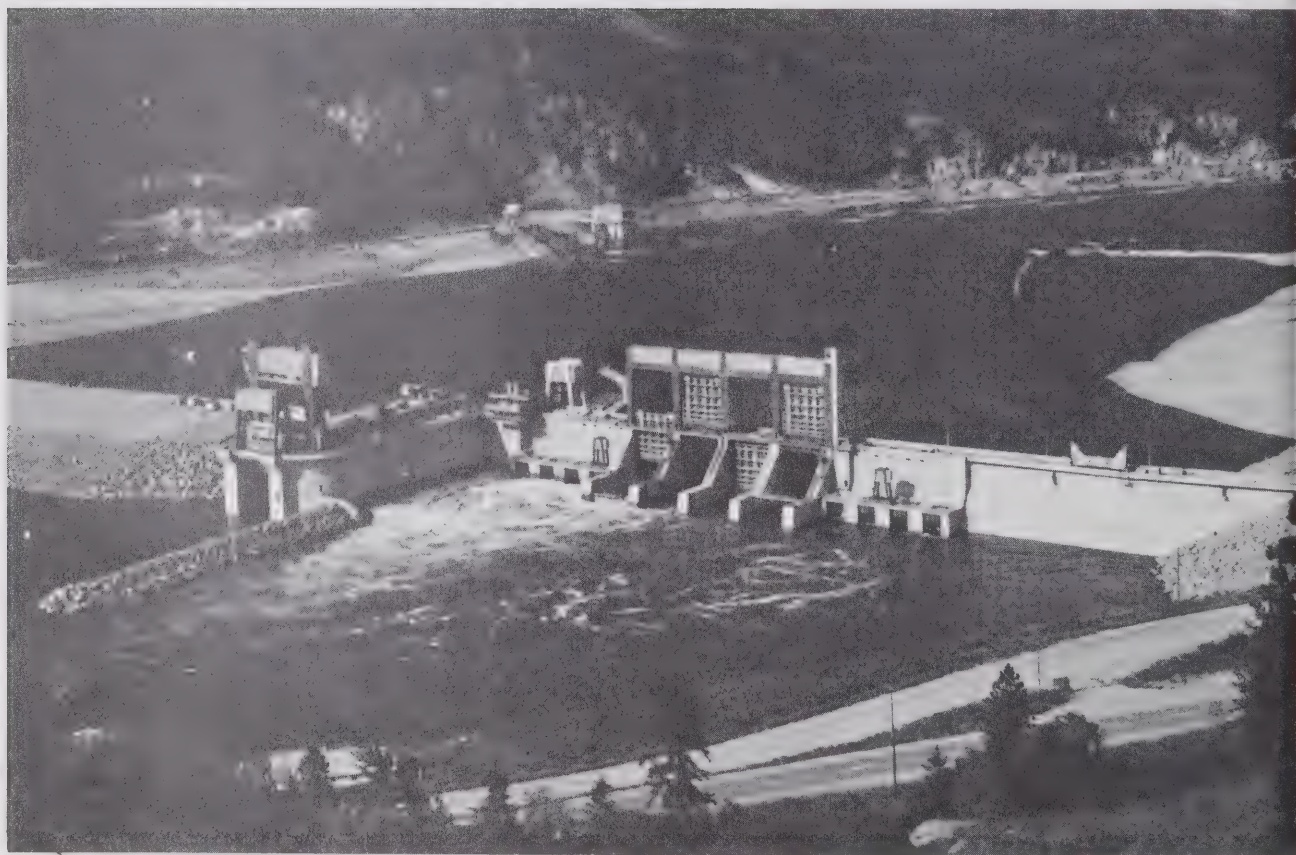
NET TOTAL FOR Canada

			1,343,640			1,743,500		11,815,300
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S - Steam, IC - Internal Combustion, GT - Gas Turbine, N - Nuclear, CT - Combustion Turbine

ELECTRIC POWER GENERATING STATIONS

*Arrow Dam near Castlegar on the Columbia River,
British Columbia.*



HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
1	Kemano	Nechako to Kemano	ALCAN	1954	1967	2,500	4 4	150,000 150,000	1,200,000	97,600 105,600	812,800
2	Gordon M. Shrum	Peace	BCHPA	1968	1968		3	310,000	930,000	227,000	681,000
3	Waneta	Pend d'Oreille	CMSC	1954	1966	210	1 2 1	130,000 120,000 130,000	500,000	72,000 72,000 76,500	292,500
4	Bridge River No. 2	Bridge River	BCHPA	1959	1960	1,264	4	82,000	328,000	62,000	248,000
5	Bridge River No. 1	Bridge River	BCHPA	1948	1954	1,261	4	69,000	276,000	45,000	180,000
6	Cheakamus	Cheakamus	BCHPA	1957	1957	954	2	95,000	190,000	70,000	140,000
7	John Hart	Campbell	BCHPA	1947	1953	390	6	28,000	168,000	20,000	120,000
8	Brilliant	Kootenay	CMSC	1944	1968	90	3 1	37,000 40,000	151,000	27,200 27,200	108,800
9	Ruskin	Stave	BCHPA	1930	1950	123	3	47,000	141,000	35,200	105,600
10	Strathcona	Campbell	BCHPA	1958	1968	140	2	42,000	84,000	33,750	67,500
11	Wahleach	Wahleach Lake to Fraser	BCHPA	1952	-	1,880	1	82,000	82,000	60,000	60,000
12	Upper Bonnington	Kootenay	CMSC	1907	1940	70	2 2 2	8,000 9,000 26,000	86,000	5,062 6,750 15,750	55,124
13	Ladore Falls	Campbell	BCHPA	1956	1957	122	2	35,000	70,000	27,000	54,000
14	Stave Falls	Stave	BCHPA	1912	1925	110 113	4 1	13,000 15,000	67,000	10,500 10,500	52,500
15	Lake Buntzen No. 1	Lake Buntzen to Burrard Inlet	BCHPA	1951	-	380	1	70,000	70,000	50,000	50,000
16	South Slocan	Kootenay	CMSC	1928	1929	70	3	25,000	75,000	15,750	47,250
17	Lower Bonnington	Kootenay	WKPL	1925	1926	70	3	20,000	60,000	15,750	47,250
18	Seton	Seton Creek	BCHPA	1956	-	147	1	58,500	58,500	42,000	42,000
19	Corra Linn	Kootenay	CMSC	1932	1932	53	3	19,000	57,000	13,500	40,500
20	Whatshan	Whatshan	BCHPA	1951	1956	690	3	16,500	49,500	11,250	33,750
21	Stillwater	Lois	MBPR	1930	1948	-	2	25,000	50,000	16,200	32,400
22	Clowhom Falls	Clowhom	BCHPA	1958	-	145	1	40,000	40,000	30,000	30,000
23	Puntledge	Puntledge	BCHPA	1955	-	340	1	35,000	35,000	27,000	27,000
24	Lake Buntzen No. 2	Lake Buntzen to Burrard Inlet	BCHPA	1913	1919	380	3	13,500	40,500	8,900	26,700
25	Jordan River	Jordan	BCHPA	1911	1931	1,010	2 1 1	5,430 10,125 18,000	38,985	3,200 8,000 12,000	26,400
26	Ash River	Ash	BCHPA	1959	-	735	1	35,000	35,000	25,200	25,200

British Columbia

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

BRITISH COLUMBIA (Cont'd)

27	La Joie	Bridge	BCHPA	1957	-	176	1	30,000	30,000	22,000	22,000
28	Powell River	Powell	MBPR	1911	1926	157 147 147	1 1 2	13,500 3,600 3,000	23,100	12,000 3,750 2,800	21,350
29	Ocean Falls	Link	CZC	1917	1932	143	2 2	2,100 6,300	16,800	1,900 4,200	12,200
30	Elko	Elk	BCHPA	1923	1924	190	2	7,500	15,000	6,000	12,000
31	Falls River	Big Falls Creek	BCHPA	1930	1960	248	2	6,000	12,000	4,800	9,600
32	Nelson	Kootenay	CN	1907	1950	60 60 70 70	1 1 1 1	1,670 1,900 3,000 6,750	13,320	750 1,000 2,120 4,800	8,670
33	Alouette	Alouette Lake to Stave Lake	BCHPA	1928	-	125.5	1	12,500	12,500	8,000	8,000
34	Walter Hardman	Cranberry Creek	COR	1960	1965	770	2	5,800	11,600	4,000	8,000
35	Shuswap Falls	Shuswap	BCHPA	1929	1942	72 82	1 1	3,800 4,000	7,800	2,400 2,800	5,200
36	Aberfeldie	Bull	BCHPA	1922	1922	275	2	3,650	7,300	2,500	5,000
37	Beach	Britannia Creek Furry Creek	ACL	1916	1917	1,835 760	1 1	3,750 3,750	7,500	2,000 2,000	4,000
38	Spillimacheen	Spillimacheen	BCHPA	1955	1955	207	2 1	1,200 3,000	5,400	900 2,200	4,000
39	Tennent Creek	Tennent Creek	WM	1966	-	2,050	1	4,500	4,500	3,060	3,060
40	Woodfibre	Woodfibre Creek	RC	1947	-	920	1	3,650	3,650	2,250	2,250
41	Port Alice	Victoria Lake to Neroutsos Inlet	RC	1953	-	425	1	3,200	3,200	2,000	2,000

Total capacity of plants under 1,500 kw. 7,250 4,686

Total capacity of turbines connected directly to mechanical equipment 46,210

Total (all plants) 5,109,615 3,538,290

Yukon Territory

1	Whitehorse Rapids	Yukon	NCPC	1958	1958	61	2	7,500	15,000	5,695	11,390
2	Mayo River	Mayo	NCPC	1952	1957	110	2	3,000	6,000	2,550	5,100

Total capacity of plants under 1,500 kw. 2,140 1,650

Total capacity of turbines connected directly to mechanical equipment

Total (all plants) 23,140 18,140

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

Northwest Territories

1	Twin Gorges	Taltson	NCPC	1965	-	-	1	25,000	25,000	18,000	18,000
2	Snare Falls	Snare	NCPC	1960	-	63	1	9,200	9,200	7,000	7,000
3	Snare Rapids	Snare	NCPC	1948	-	56	1	8,350	8,350	7,000	7,000
4	Bluefish Lake	Yellowknife	CMSC	1941	-	110	1	4,700	4,700	3,360	3,360

Total capacity of plants under 1,500 kw.

Total capacity of turbines connected directly to mechanical equipment

Total (all plants)	47,250	35,360
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Alberta

1	Big Bend	Brazeau	CP	1965	1967	386	1	210,000 250,000	460,000	144,000 161,500	305,500
2	Spray	Spray Diversion	CP	1951	1960	875	2	62,000	124,000	40,400	80,800
3	Rundle	Spray Diversion	CP	1951	1960	318 317	1 1	23,000 40,000	63,000	17,000 29,750	46,750
4	Ghost	Bow	CP	1929	1954	105 92	2 1	18,000 30,000	66,000	12,750 21,150	46,650
5	Cascade	Cascade	CP	1942	1957	320	2	23,000	46,000	17,000	34,000
6	Pumping-Generating Station	Brazeau	CP	1965	-	-	2	12,850	25,700	9,720	19,440
7	Horseshoe	Bow	CP	1953	1955	72	2 2	4,680 7,500	24,360	3,375 5,625	18,000
8	Kananaskis	Bow	CP	1913	1951	68 70	2 1	6,000 12,000	24,000	3,400 9,560	16,360
9	Bearspaw	Bow	CP	1954	-	48	1	20,750	20,750	15,300	15,300
10	Pocaterra	Kananaskis	CP	1955	-	185	1	18,400	18,400	13,500	13,500
11	Barrier	Kananaskis	CP	1947	-	135	1	13,500	13,500	9,560	9,560
12	Interlakes	Kananaskis	CP	1955	-	98	1	6,900	6,900	5,040	5,040
13	Three Sisters	Spray Diversion	CP	1951	-	50	1	3,600	3,600	3,400	3,400

Total capacity of plants under 1,500 kw.

Total capacity of turbines connected directly to mechanical equipment

Total (all plants)	898,053	616,200
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HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

Saskatchewan

1	Squaw Rapids	Saskatchewan	SPC	1963	1966	105	6 2	46,000 53,000	382,000	33,500 38,700	278,400
2	Coteau Creek	South Saskatchewan	SPC	1968	1968		3	84,000	252,000	62,200	186,600
3	Island Falls	Churchill	CRPC	1930	1959	56	3 3 1	16,500 19,000 19,000	125,500	11,880 18,000 17,100	106,740
4	Waterloo Lake	Charlot	EN	1961	-	63	1	10,000	10,000	7,500	7,500
5	Wellington Lake	Charlot	EN	1939	1960	70	2	3,300	6,600	2,400	4,800

Total capacity of plants under 1,500 kw.

Total capacity of turbines connected directly to mechanical equipment

Total (all plants)	776,100	584,040
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Manitoba

1	Grand Rapids	Saskatchewan	MH	1965	1968	-	4	150,000	600,000	109,250	437,000
2	Kelsey	Nelson	MH	1960	1961	50	5	42,000	210,000	33,750	168,750
3	Seven Sisters	Winnipeg	MH	1931	1952	66	6	33,330	200,000	25,000	150,000
4	Great Falls	Winnipeg	MH	1923	1928	58	6	31,000	186,000	22,000	132,000
5	Pine Falls	Winnipeg	MH	1951	1952	37	6	19,000	114,000	13,950	83,700
6	Slave Falls	Winnipeg	WH	1931	1948	30	8	12,000	96,000	9,000	72,000
7	Pointe du Bois	Winnipeg	WH	1911	1925	45	5 3 3 3 2	5,200 6,800 6,900 7,300 8,000	105,000	3,000 4,000 5,200 5,200 5,200	68,600
8	McArthur Falls	Winnipeg	MH	1954	1955	23	8	10,000	80,000	7,650	61,200
9	Laurie River No. 2	Laurie	SGM	1958	-	55	1	7,000	7,000	5,400	5,400
10	Laurie River No. 1	Laurie	SGM	1950	1952	55	2	3,500	7,000	2,475	4,950

Total capacity of plants under 1,500 kw.

Total capacity of turbines connected directly to mechanical equipment

Total (all plants)	1,605,000	1,183,600
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HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
1	Sir Adam Beck - Niagara Generating Station No. 1	Niagara	HEPCO	1922	1930	305 294 294 294	5 2 1 2	55,000 58,000 58,000 58,000		36,000 43,200 44,000 46,750	
									565,000		403,900
	Generating Station No. 2			1954	1958	292	16	105,000	1,680,000	76,475	1,223,600
	Pumping-Generating Station			1957	1958	85	6	46,000	276,000	29,450	176,700
2	Robert H. Saunders - St. Lawrence	St. Lawrence	HEPCO	1958	1959	81	16	75,000	1,200,000	57,000	912,000
3	Des Joachims	Ottawa	HEPCO	1950	1951	130	8	62,000	496,000	45,000	360,000
4	Abitibi Canyon	Abitibi	HEPCO	1933	1959	237	3	66,000		41,225	
							2	66,000	330,000	43,200	210,075
5	Otto Holden	Ottawa	HEPCO	1952	1953	77	4	35,000		25,650	
							4	33,000	272,000	25,650	205,200
6	Otter Rapids	Abitibi	HEPCO	1961	1963	107	4	60,000	240,000	43,700	174,800
7	Barrett Chute	Madawaska	HEPCO	1942	1942	150	2	28,000		20,400	
							2	84,000	224,000	55,800	152,400
8	Mountain Chute	Madawaska	HEPCO	1967	1967	151	2	112,000	224,000	69,750	139,500
9	Harmon	Mattagami	HEPCO	1965	1965	101	2	94,000	188,000	64,600	129,200
10	Pine Portage	Nipigon	HEPCO	1950	1954	105	2	41,000		29,700	
							2	45,000	172,000	34,650	128,700
11	Kipling	Mattagami	HEPCO	1966	1966	102	2	94,000	188,000	62,700	125,400
12	Chenau	Ottawa	HEPCO	1950	1951	40	8	21,000	168,000	15,300	122,400
13	Little Long	Mattagami	HEPCO	1963	1963	90	2	84,000	168,000	60,800	121,600
14	Decew Falls No. 2	Welland Canal	HEPCO	1943	1947	280	2	75,000	150,000	57,600	115,200
15	Ontario Power	Niagara	HEPCO	1905	1919	-	3	11,700		7,500	
							4	11,700		8,770	
							5	13,400	148,900	8,775	101,455
16	Rankine	Niagara	CNPC	1904	1924	133	5	10,000		7,500	
							2	12,500		9,375	
							3	10,750		9,375	
							1	12,000	119,250	10,300	94,675
17	Toronto Power	Niagara	HEPCO	1906	1915	-	7	15,000		9,000	
							4	13,000	157,000	7,200	91,800
18	Chats Falls	Ottawa	HEPCO	1931	1931	53	4	28,000	112,000	22,325	89,300
19	Caribou Falls	English	HEPCO	1958	1958	58	3	34,000	102,000	25,650	76,950
20	Cameron Falls	Nipigon	HEPCO	1920	1958	72	2	12,500		9,540	
						72	4	12,500		8,480	
						73	1	25,000	100,000	19,000	72,000

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
21	Manitou Falls	English	HEPCO	1956	1958	54	5	18,500	92,500	14,400	72,000
22	Alexander	Nipigon	HEPCO	1930	1958	60 58	3 2	18,000 19,000	92,000	12,750 13,500	65,250
23	Whitedog Falls	Winnipeg	HEPCO	1958	1958	50	3	27,000	81,000	21,600	64,800
24	Stewartville	Madawaska	HEPCO	1948	1948	148	3	28,000	84,000	20,400	61,200
25	Smoky Falls	Mattagami	SFPPC	1928	1931	113	4	18,750	75,000	13,200	52,800
26	Silver Falls	Kaministiquia	HEPCO	1959	-	330	1	60,000	60,000	45,000	45,000
27	Geo. W. Rayner	Mississagi	HEPCO	1950	1950	210	2	29,000	58,000	21,150	42,300
28	Upper Falls	Montreal	GLPC	1937	1957	232	2 1	12,600 31,000	56,200	9,000 22,500	40,500
29	Aguasabon	Aguasabon	HEPCO	1948	1948	290	2	27,500	55,000	20,250	40,500
30	Red Rock Falls	Mississagi	HEPCO	1960	1961	93	2	26,500	53,000	20,250	40,500
31	Island Falls	Abitibi	APPC	1924	1925	63	4	12,000	48,000	9,600	38,400
32	DeCew Falls No. 1	Welland Canal	HEPCO	1901	1913	-	1 1 2 1 1	6,000 6,000 6,000 6,000 6,000	36,000	4,800 5,000 5,300 5,600 5,900	31,900
33	Kakabeka Falls	Kaministiquia	HEPCO	1906	1914	178	3 1	7,500 12,500	35,000	5,400 7,970	24,170
34	High Falls	Michipicoten	GLPC	1930	1950	147	2 1	11,000 13,200	35,200	6,750 9,675	23,175
35	Big Eddy	Spanish	HCL	1929	1929	90	3	9,400	28,200	7,200	21,600
36	Sault Ste. Marie	St. Mary	GLPC	1918	1931	18.5	24 3 1	900 2,400 2,200	31,000	650 1,440 1,600	21,520
37	Iroquois Falls	Abitibi Lake & Black River	APPC	1949	1949	43	1 1 1 6 5	1,800 1,800 2,200 2,200 2,400	31,000	1,200 1,280 1,200 1,280 2,025	21,485
38	Twin Falls	Abitibi	APPC	1921	1925	57.5	5	6,000	30,000	4,050	20,250
39	Gartshore	Montreal	GLPC	1958	-	112	1	30,300	30,300	20,000	20,000
40	Hollingsworth Falls	Michipicoten	GLPC	1959	-	108	1	30,300	30,300	20,000	20,000
41	Ear Falls	English	HEPCO	1930	1948	36	1 1 2	5,000 5,000 7,500	25,000	4,000 3,825 5,400	18,625
42	High Falls	Spanish	HCL	1905	1966	85	4 1	4,000 7,500	23,500	3,000 5,550	17,550
43	Norman	Winnipeg (West Branch)	OMPP	1925	1925	22	5	3,400	17,000	3,300	16,500

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
44	Lower Falls	Montreal	GLPC	1938	1942	185	2	10,900	21,800	8,100	16,200
45	Hogg	Montreal	GLPC	1965	-	77	1	21,750	21,750	15,000	15,000
46	Espanola	Spanish	KVPC	1906	1946	64	4	1,675		1,250	
						64	1	10,000		7,500	
						64	1	2,350	19,050	1,750	14,250
47	Scott Falls	Michipicoten	GLPC	1952	1952	70	2	10,000	20,000	6,800	13,600
48	Fort Frances	Rainy	OMPP	1955	1955	28	8	2,000	16,000	1,600	12,800
49	Welland Canal	Welland Canal	STLSA	1932	1932	160	3	5,000	15,000	4,000	12,000
50	Wawaitin	Mattagami	HEPCO	1912	1918	125	2	3,450		2,500	
							2	4,000	14,900	3,375	11,750
51	Kenora	Winnipeg	OMPP	1923	1924	22	4	1,200		1,000	
							6	1,200	12,000	1,250	11,500
52	Heely Falls	Trent	HEPCO	1913	1919	73	2	5,600		3,750	
							1	5,600	16,800	3,000	10,500
53	McPhail Falls	Michipicoten	GLPC	1954	1954	48	2	7,500	15,000	5,000	10,000
54	Upper Notch	Montreal	HEPCO	1930	1930	48	2	6,500	13,000	4,800	9,600
55	Calm Lake	Seine	OMPP	1928	1928	82	2	6,400	12,800	4,675	9,350
56	Sturgeon Falls	Sturgeon	APPC	1902	1964	40.5	1	2,500		1,800	
							1	1,000		1,685	
							1	1,500		1,350	
							1	1,500		1,685	
							1	1,500		1,415	
							1	1,000	9,000	1,415	9,350
57	Eddy	Ottawa	EBEC	1909	1912	38	2	4,650		3,000	
							1	4,650	13,950	3,300	9,300
58	Crystal Falls	Sturgeon	HEPCO	1921	1921	33	4	2,600	10,400	2,020	8,080
59	Ranney Falls	Trent	HEPCO	1922	1926	-	1	1,000		720	
							2	5,000	11,000	3,600	7,920
60	Chaudière Falls No.4	Ottawa	OHEC	1931	1931	38	2	5,400	10,800	3,960	7,920
61	Big Eddy	Muskoka	HEPCO	1941	1941	38	2	5,280	10,560	3,825	7,650
62	Ragged Rapids	Muskoka	HEPCO	1938	1938	38	2	5,200	10,400	3,825	7,650
63	Sturgeon Falls	Seine	OMPP	1927	1927	64	2	5,000	10,000	3,825	7,650
64	Matabitchuan	Matabitchuan	HEPCO	1910	1910	305	4	3,300	13,200	1,690	6,760
65	Swift Rapids	Severn	OWLP	1916	1966	47	1	2,120		1,350	
							2	3,500	9,120	2,700	6,750
66	Lower Sturgeon	Mattagami	HEPCO	1923	1923	42	2	4,000	8,000	3,200	6,400
67	Smooth Rock	Mattagami	APPC	1916	1916	45	2	4,500	9,000	3,125	6,250
68	Eugenia	Beaver	HEPCO	1915	1920	550	2	2,250		1,200	
							1	4,000	8,500	2,400	4,800

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
69	Meyersburg	Trent	HEPCO	1924	1924	32	3	2,200	6,600	1,600	4,800
70	Nairn	Spanish	HCL	1917	1919	30	3	2,600	7,800	1,500	4,500
71	Chaudière Falls No. 2	Ottawa	OHEC	1909	1936	40	3	2,300	6,900	1,462	4,386
72	Peterborough	Otonabee	PHPC	1902	1950	27	1	2,300		1,200	
							1	2,550		1,500	
							1	2,140	6,990	1,400	4,100
73	Coniston	Wanapitei	HEPCO	1905	1915	53	1	1,200		720	
							1	1,600		1,125	
							1	3,500	6,300	2,250	4,095
74	Stinson	Wanapitei	HEPCO	1925	1925	-	2	3,500	7,000	2,000	4,000
75	Calabogie	Madawaska	HEPCO	1917	1917	30	2	3,000	6,000	2,000	4,000
76	Big Chute	Severn	HEPCO	1911	1919	56	3	1,300		900	
							1	2,300	6,200	1,280	3,980
77	South Falls	South Muskoka	HEPCO	1916	1925	107	1	1,000		635	
							2	2,200	5,400	1,600	3,835
78	Wabagishik	Vermilion	HCL	1912	1935	70	1	2,700		1,600	
							1	2,700	5,400	2,140	3,740
79	Minden	Gull	OWLP	1935	1935	66	2	2,600	5,200	1,800	3,600
80	Sandy Falls	Mattagami	HEPCO	1911	1916	32	2	1,200		950	
						34	1	2,500	4,900	1,595	3,495
81	Hagues Reach	Trent	HEPCO	1925	1925	22.5	3	1,600	4,800	1,120	3,360
82	Indian Chute	Montreal	HEPCO	1923	1924	45	2	2,250	4,500	1,620	3,240
83	Sidney	Trent	HEPCO	1911	1911	20	4	1,400	5,600	795	3,180
84	Seymour	Trent	HEPCO	1909	1911	23	4	1,100		600	
							1	1,100	5,500	750	3,150
85	Mathias	Muskoka	OWLP	1950	-	43	1	3,770	3,770	2,812	2,812
86	Hound Chute	Montreal	HEPCO	1910	1911	-	4	1,335	5,340	700	2,800
87	Kapuskasing	Kapuskasing	SFPPC	1923	-	30	1	2,500	2,500	2,750	2,750
88	Frankford	Trent	HEPCO	1913	1913	18	4	1,200	4,800	650	2,600
89	Jones Falls	Rideau Canal	GELW	1948	1950	65	1	250		180	
						58	2	1,037		800	
						58	1	1,500	3,824	800	2,580
90	Sills Island	Trent	HEPCO	1926	1926	14	1	1,000		1,275	
							1	1,000	2,000	1,020	2,295
91	McVittie	Wanapitei	HEPCO	1912	1912	42	2	1,800	3,600	1,125	2,250
92	Nassau	Otonabee	CGEC	1902	1926	16	1	1,600		1,500	
							2	700	3,000	360	2,220
93	High Falls	Mississippi	HEPCO	1920	1920	82	3	1,240	3,720	700	2,100

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
ONTARIO (Cont'd)											
94	Nipissing	South	HEPCO	1909	1909	-	1 1	1,250 1,250	2,500	1,000 1,050	2,050
95	Lakefield	Otonabee	HEPCO	1928	-	16	1	3,100	3,100	2,000	2,000
96	Fountain Falls	Montreal	HEPCO	1914	1914	30	2	1,500	3,000	1,000	2,000
97	Rideau Falls	Rideau	DPW	1909	1909	47	2	1,500	3,000	1,000	2,000
98	Crow Bay	Trent Canal	CPUC	1909	1911	-	1 1	1,470 1,000	2,470	1,125 850	1,975
99	Auburn	Otonabee	HEPCO	1911	1912	18	3	950	2,850	625	1,875
100	Current River	Current	PAPUC	1902	1906	80	2 1	450 1,200	2,100	350 1,100	1,800
101	Eagle	Eagle	DPC	1928	-	37	1	2,000	2,000	1,760	1,760
102	Trethewey Falls	South Muskoka	HEPCO	1929	-	35	1	2,300	2,300	1,600	1,600
Total capacity of plants under 1,500 kw.									30,086	21,244	
Total capacity of turbines connected directly to mechanical equipment									27,375		
Total (all plants)									8,927,805	6,412,082	

Quebec

1	Beauharnois: Section 1	St. Lawrence	QHEC	1932	1948	80	8 6	53,000 53,000		37,300 40,000	
	Section 2			1950	1953	80	3 3 6	55,000 56,000 56,000		40,000 41,120 40,000	
	Section 3			1959	1961	80	10	73,700	2,148,000	55,250	1,574,260
2	Manic 2	Manicouagan	QHEC	1965	1967	230	8	170,000	1,360,000	126,900	1,015,200
3	Bersimis I	Betsiamites	QHEC	1956	1959	785	8	150,000	1,200,000	114,000	912,000
4	Chute des Passes	Peribonka	ALCAN	1959	1960	540	5	200,000	1,000,000	148,500	742,500
5	Shipshaw	Saguenay	ALCAN	1942	1943	208	2 6 2 2	95,000 103,000 101,000 95,000	1,200,000	58,500 60,000 60,000 60,000	717,000
6	Bersimis II	Betsiamites	QHEC	1959	1960	380	5	180,000	900,000	131,000	655,000
7	Carillon	Ottawa	QHEC	1962	1964	61	14	60,000	840,000	46,750	654,500
8	Isle Maligne	Saguenay	SAPC	1925	1937	110	12	45,000	540,000	28,000	336,000
9	McCormick Dam	Manicouagan	MP	1951	1965	124	2 3 2	56,200 60,000 80,000	452,400	35,625 40,000 56,250	303,750

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
10	Trenche	St. Maurice	QIEC	1950	1955	160	6	65,000	390,000	47,700	286,200
11	Beaumont	St. Maurice	QIEC	1958	1959	124	6	55,000	330,000	40,500	243,000
12	La Tuque	St. Maurice	QIEC	1940	1955	114	5 1	44,500 49,000	271,500	36,000 36,000	216,000
13	Paugan	Gatineau	QIEC	1928	1956	133 132	1 7	47,000 34,000	285,000	32,400 24,225	201,975
14	Chute-à-la-Savane	Peribonka	ALCAN	1953	1953	110	5	57,000	285,000	37,450	187,250
15	Chute-du-Diable	Peribonka	ALCAN	1952	1952	110	5	55,000	275,000	37,450	187,250
16	Manic 1	Manicouagan	QHEC	1966	1967	120	3	80,000	240,000	61,470	184,410
17	Rapide Blanc	St. Maurice	QHEC	1934	1955	108	1 5	44,500 40,000	244,500	30,600 30,600	183,600
18	Chute à Caron	Saguenay	ALCAN	1931	1934	160	4	75,000	300,000	45,000	180,000
19	Shawinigan No. 2	St. Maurice	QHEC	1911	1929	145	3 3 2	43,000 18,500 18,500	221,500	30,000 15,000 14,000	163,000
20	Cedars	St. Lawrence	QHEC	1914	1924	35	18	12,650	227,700	9,000	162,000
21	Shawinigan No. 3	St. Maurice	QHEC	1948	1949	145	3	65,000	195,000	50,000	150,000
22	Grand'Mère	St. Maurice	QHEC	1915	1930	80	5 1 1 84	22,000 22,000 24,500 22,000	200,500	15,725 18,000 20,000 15,725	148,075
23	Chelsea	Gatineau	QHEC	1927	1939	100	5	34,000	170,000	28,800	144,000
24	La Gabelle	St. Maurice	QHEC	1924	1931	60	3 2	36,000 32,000	172,000	24,750 24,750	123,750
25	Rapide-des-Iles	Ottawa (Upper)	QHEC	1966	1967	86	3	50,000	150,000	36,630	109,890
26	Farmers Rapids	Gatineau	QHEC	1927	1947	66	3 2	24,000 24,000	120,000	20,000 19,125	98,250
27	Masson	Lièvre	MQPC	1933	1933	185	4	34,000	136,000	23,800	95,200
28	Quinze Rapids	Ottawa (Upper)	QHEC	1923	1955	90	2 2 2	10,000 10,000 34,500	109,000	8,000 10,800 26,000	89,600
29	Chat Falls	Ottawa	OVPC	1932	1932	53	4	29,940	119,760	22,325	89,300
30	High Falls	Lièvre	MQPC	1930	1936	180	1 3	32,500 30,000	122,500	21,250 21,250	85,000
31	Rapid VII	Ottawa (Upper)	QHEC	1941	1949	68	4	16,000	64,000	14,250	57,000
32	Bryson	Ottawa	QHEC	1925	1949	60	2 1	25,700 27,000	78,400	18,000 20,000	56,000
33	Murdock Willson	Shipshaw	PCL	1957	-	263	1	82,000	82,000	51,000	51,000

QUEBEC (Cont'd)

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)											
34	Jim Gray	Shipshaw	PCL	1953	1953	338	2	35,000	70,000	25,500	51,000
35	Outardes Falls	Outardes	QNSPC	1937	1937	208	2	36,300	72,600	25,000	50,000
36	Fifty Foot Falls	Hart Jaune	HJP	1960	1960	123	3	22,000	66,000	16,150	48,450
37	Rapid II	Ottawa (Upper)	QHEC	1954	1964	67	4	16,000	64,000	12,000	48,000
38	Montreal Island	Prairies	QHEC	1929	1930	26	3 3	8,800 12,000	62,400	7,500 7,500	45,000
39	Dufferin Falls	Lièvre	JMC	1958	1959	62	2	25,000	50,000	19,125	38,250
40	Chicoutimi	Chicoutimi	SMPC	1957	-	273	1	42,000	42,000	32,000	32,000
41	Première Chutes	Ottawa (Upper)	QHEC	1968	-		1	40,000	40,000	31,000	31,000
42	Hemming Falls	St. François	QHEC	1925	1925	48	6	5,600	33,600	4,800	28,800
43	Hull 2	Ottawa	QHEC	1920	1968	32	3 1	7,500 13,400	35,900	5,760 10,000	27,280
44	Seven Falls	St. Anne (de Beaurpré)	QHEC	1916	1916	410	4	6,000	24,000	4,680	18,720
45	Ste. Marguerite	Marguerite	GPC	1954	1954	100	2	12,000	24,000	8,800	17,600
46	Kipawa	Gordon Creek	QHEC	1920	1926	200	2 1 1	3,600 8,500 9,350	25,050	2,800 5,760 5,760	17,120
47	St. Narcisse	Batiscan	QHEC	1926	1926	147	2	11,100	22,200	7,500	15,000
48	Drummondville	St. François	QHEC	1910	1925	27	2 2	3,200 6,000	18,400	2,500 4,800	14,600
49	Chutes aux Galets	Shipshaw	PCL	1921	1921	101	2	8,820	17,640	6,800	13,600
50	Chaudière Falls	Ottawa	EBEC	1913	1955	38	3	5,500	16,500	3,750	11,250
51	Chicoutimi	Chicoutimi	PCL	1923	-	72	1	11,000	11,000	9,900	9,900
52	W.R. Beatty	Black	PELC	1917	1951	129	1 1 1 2	1,800 2,250 2,500 3,000	12,550	1,250 1,530 1,800 2,250	9,080
53	Buckingham	Lièvre	ERC	1914	1939	30	1 1 3	2,000 2,500 2,000	10,500	1,375 1,836 1,440	7,531
54	Price	Mitis	QHEC	1922	1929	120	1 1	3,700 5,900	9,600	2,400 4,000	6,400
55	Adam Cunningham	Shipshaw	PCL	1953	-	56	1	9,500	9,500	6,375	6,375
56	Arnaud Bridge	Chicoutimi	QHEC	1912	1917	56	1 2	2,500 2,500	7,500	1,700 1,875	5,450
57	Bell Falls	Rouge	QHEC	1915	1920	54	3	2,400	7,200	1,600	4,800
58	Kenogami	Au Sable	PCL	1912	1912	264	2	3,350	6,700	2,345	4,690

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
59	Grand Mitis No. 2	Mitis	QHEC	1947	-	75	1	6,000	6,000	4,250	4,250
60	Jonquière No. 1	Au Sable	MJ	1907	1924	42	1	1,800		1,280	
						47	1	4,030	5,830	2,812	4,092
61	Westbury	St. François	CS	1928	1928	28	2	2,900	5,800	2,000	4,000
62	Chaudière	Chaudière	QHEC	1903	1904	114	2	1,400		1,000	
							1	2,000	4,800	1,500	3,500
63	Lachute Mills	North	AL	1929	1929	36	3	1,500	4,500	1,080	3,240
64	Windsor Mills	St. François	DPP	1936	1939	19	2	1,500		1,120	
							1	800		600	
							1	430	4,230	320	3,160
65	Weedon	St. François	CS	1920	1926	30	2	1,700		1,040	
						29	1	1,700	5,100	1,040	3,120
66	St. Alban	Ste. Anne de la Pérade	QHEC	1927	-	64	1	4,000	4,000	3,000	3,000
67	Ogilvie Flour Mills	Lachine Canal	OFM	1940	1948	23	2	1,600		1,200	
						15	2	400	4,000	300	3,000
68	St. Raphaël	Sud	QHEC	1921	1921	232	3	1,500	4,500	850	2,550
69	Domtar	Jacques Cartier	DPP	1960	1962	60	2	1,200	2,400	1,200	2,400
70	MacDougall	Jacques Cartier	DPP	1925	1927	55	2	1,900	3,800	1,200	2,400
71	Jonquière	Au Sable	PCL	1916	1916	67	1	1,800		1,200	
							1	1,625	3,425	1,200	2,400
72	Winneway	Winneway (Upper Ottawa)	LMC	1938	1943	54	2	1,400	2,800	1,169	2,338
73	Mont Laurier	Lièvre	QHEC	1937	1951	22	1	500		500	
							2	1,325	3,150	900	2,300
74	Sherbrooke	Magog	QHEC	1910	1910	55	3	1,333	4,000	752	2,256
75	Garneau	Chicoutimi	QHEC	1925	-	33	1	3,450	3,450	2,240	2,240
76	Magog	Magog	DTC	1920	1920	25	2	1,500	3,000	1,000	2,000
77	Corbeau	Gatineau	QHEC	1926	1926	16	2	1,250	2,500	1,000	2,000
78	Bird's	Jacques Cartier	DPP	1937	-	27	1	2,250	2,250	1,920	1,920
79	Rock Forest	Magog	CS	1911	1911	30	2	1,500	3,000	940	1,880
80	Rivière-du-Loup	Du Loup	CRL	1929	1942	100	1	960		640	
							1	1,900	2,860	1,200	1,840
81	East Angus Mill	St. François	DPP	1910	1910	33	1	1,090		846	
						33	1	1,090		990	
						20	1	252	2,432	-	1,836
82	Magpie	Magpie	QHEC	1961	1961	31	2	1,500	3,000	900	1,800
83	Rawdon	Ouareau	QHEC	1928	-	46	1	2,300	2,300	1,720	1,720

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)											
84	Frontenac	Magog	CS	1917	1917	38	2	1,450	2,900	800	1,600
85	Burroughs Falls	Nigger	QIEC	1929	-	180	1	2,000	2,000	1,600	1,600
Total capacity of plants under 1,500 kw.									25,360	16,548	
Total capacity of turbines connected directly to mechanical equipment									59,365		
Total (all plants)									15,371,352	11,048,846	

New Brunswick

1	Mactaquac	Saint John	NBEPC	1968	1968		3	140,000	420,000	100,000	300,000
2	Beechwood	Saint John	NBEPC	1957	1962	57	2 1	45,000 55,000	145,000	36,000 40,500	112,500
3	Grand Falls	Saint John	NBEPC	1928	1931	125	4	20,000	80,000	15,750	63,000
4	Tinker	Aroostook	MNEP	1906	1965	85	2 2 1	2,000 5,000 33,000	47,000	1,500 3,520 20,800	30,840
5	Tobique	Tobique	NBEPC	1953	1953	75	2	13,500	27,000	10,000	20,000
6	Great Falls	Nepisiguit	CB	1921	1930	108 110	2 1	5,000 5,500	15,500	3,600 3,600	10,800
7	Sisson	Tobique	NBEPC	1965	1965	135	1	12,500	12,500	10,000	10,000
8	Musquash	Musquash	NBEPC	1920	1920	99.5 124.5	2 1	3,670 3,760	11,100	2,320 2,320	6,960
9	Milltown	St. Croix	NBEPC	1911	1967	21 25 30	3 1 1 1 1	1,080 500 468 500 900	5,608	770 376 350 400 700	4,136
10	Edmundston	Madawaska	FC	1918	1918	21.1	2	1,000	2,000	1,000	2,000
Total capacity of plants under 1,500 kw.									3,025	2,500	
Total capacity of turbines connected directly to mechanical equipment									5,000		
Total (all plants)									773,733	562,736	

Nova Scotia

1	Weymouth Falls	Sissiboo	NSPC	1960	1967	122	2	12,000	24,000	9,000	18,000
2	Lequille	Allain	NSLPC	1968	-		1	15,000	15,000	11,200	11,200

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.
3	Deep Brook	Mersey	NSPC	1950	1950	46	2	6,400	12,800	4,500	9,000
4	Big Falls	Mersey	NSPC	1929	1929	58	2	6,350	12,700	4,500	9,000
5	Lower Lake Falls	Mersey	NSPC	1929	1929	48.5	2	5,300	10,600	3,690	7,380
6	Cowie Falls	Mersey	NSPC	1937	1937	43	2	5,100	10,200	3,600	7,200
7	Ruth Falls	East, Sheet Harbour	NSPC	1927	1956	110 109	2 1	3,145 4,300	10,590	2,000 2,970	6,970
8	Hells Gates	Black	NSLPC	1930	1949	185	1 1	4,500 4,500	9,000	3,360 3,570	6,930
9	Nictaux	Nictaux	NSLPC	1954	-	382	1	9,000	9,000	6,800	6,800
10	Gulch	Bear	NSPC	1956	-	225	1	8,500	8,500	6,000	6,000
11	Sissiboo Falls	Sissiboo	NSPC	1960	-	87	1	8,000	8,000	6,000	6,000
12	Upper Lake Falls	Mersey	NSPC	1929	1929	31.5	2	2,350	4,700	2,700	5,400
13	Hollow Bridge	Black	NSLPC	1940	-	148	1	7,500	7,500	5,312	5,312
14	Tidewater	North East	NSPC	1921	1921	91.5	2	3,450	6,900	2,320	4,640
15	Lower Great Brook	Mersey	NSPC	1955	1955	22	2	3,120	6,240	2,250	4,500
16	Ridge	Bear	NSPC	1957	-	140	1	5,300	5,300	4,000	4,000
17	Dickie Brook	Dickie Brook	NSPC	1948	1948	298	1 1	1,750 1,750	3,500	1,200 2,600	3,800
18	Avon No. 1	Avon	NSLPC	1958	-	117.5	1	5,000	5,000	3,750	3,750
19	Malay Falls	East, Sheet Harbour	NSPC	1924	1954	43 41	2 1	1,850 1,740	5,440	1,200 1,200	3,600
20	Paradise	Paradise Brook	NSLPC	1950	-	465	1	5,000	5,000	3,600	3,600
21	Methal's	Methal's Brook	NSLPC	1949	-	45	1	4,600	4,600	3,400	3,400
22	Sandy Lake	North East	NSPC	1927	1927	118	2	2,500	5,000	1,600	3,200
23	White Rock	Gasperaux	NSLPC	1952	-	58	1	4,000	4,000	3,200	3,200
24	St. Croix	St. Croix	MBPP	1934	-	148	1	4,200	4,200	3,000	3,000
25	Avon No. 2	Avon	NSLPC	1929	-	142	1	3,900	3,900	3,000	3,000
26	Lumsden	Black	NSLPC	1942	-	72	1	4,500	4,500	2,800	2,800
27	Mill Lake	North East	NSPC	1921	1921	162.5	2	1,900	3,800	1,280	2,560
28	Tusket	Tusket	NSPC	1929	1929	18	3	940	2,820	720	2,160
29	Salmon Hole	St. Croix	MBPP	1938	-	75	1	2,500	2,500	2,000	2,000

Total capacity of plants under 1,500 kw.

6,365

4,358

Total capacity of turbines connected directly to mechanical equipment

Total (all plants)

221,655

162,760

HYDRO

No.	Development	River	Owner	Year Installed		Rated Head ft.	No. of Units	Turbines		Generators	
				First Unit	Latest Unit			Unit Capacity hp.	Total Capacity hp.	Unit Capacity kw.	Total Capacity kw.

Newfoundland

1	Bay d'Espoir	Salmon	NPC	1967	1967		4	100,000	400,000	76,500	306,000
2	Twin Falls	Unknown	TFPC	1962	1963	290	5	60,000	300,000	46,800	234,000
3	Deer Lake	Humber	BPC	1925	1930	247	4 3 2	16,000 16,000 29,000	170,000	11,284 11,305 19,950	118,951
4	Grand Falls	Exploits	PPP	1909	1938	109	3 1	2,500 36,000	43,500	1,500 26,000	30,500
5	Menihek	Ashuanipi (Labrador)	IOCC	1954	1960	34 40	2 1	6,000 13,500	25,500	4,250 10,200	18,700
6	Bishops Falls	Exploits	PPP	1909	1952	35	7 2	2,700 1,500	21,900	2,025 1,500	17,175
7	Rattling Brook	Rattling Brook	NLPC	1958	1958	307	2	8,500	17,000	6,375	12,750
8	Mobile	Mobile	NLPC	1951	-	370	1	13,000	13,000	9,350	9,350
9	Watson's Brook	Corner Brook	BPC	1958	1958	559	2	6,000	12,000	4,600	9,200
10	Horse Chops	Horse Chops	NLPC	1953	-	276	1	10,000	10,000	7,650	7,650
11	Tors Cove	Tors Cove	NLPC	1942	1951	173	2 1	2,850 3,500	9,200	2,000 2,500	6,500
12	Cape Broyle	Horse Chops	NLPC	1952	-	176	1	7,600	7,600	6,000	6,000
13	Sandy Brook	Sandy Brook	NLPC	1963	-	115	1	8,000	8,000	5,950	5,950
14	Lookout Brook	Lookout Brook	WCPC	1945	1958	575	2 1	1,850 3,600	7,300	1,400 2,400	5,200
15	Petty Harbour	Petty Harbour	NLPC	1908	1926	190	2 1	2,100 2,750	6,950	1,600 1,800	5,000
16	New Chelsea	New Chelsea Brook	NLPC	1957	-	275	1	5,600	5,600	4,000	4,000
17	Seal Cove	Seal Cove	NLPC	1922	1927	190	1 1	1,500 3,040	4,540	1,200 2,400	3,600
18	Pierres Brook	Pierres Brook	NLPC	1931	-	263	1	4,500	4,500	3,200	3,200
19	Rocky Pond	Tors Cove	NLPC	1943	-	107	1	4,200	4,200	3,200	3,200
20	Lockston	Lockston	NLPC	1956	1961	270	2	2,000	4,000	1,500	3,000
21	Hearts Content	Hearts Content Brook	NLPC	1960	-	150	1	3,600	3,600	2,400	2,400
22	Buchans Brook	Buchans Brook	ASRC	1927	-	163	1	2,359	2,359	1,760	1,760

Total capacity of plants under 1,500 kw.

7,490

5,440

Total capacity of turbines connected directly to mechanical equipment

22,000

Total (all plants)

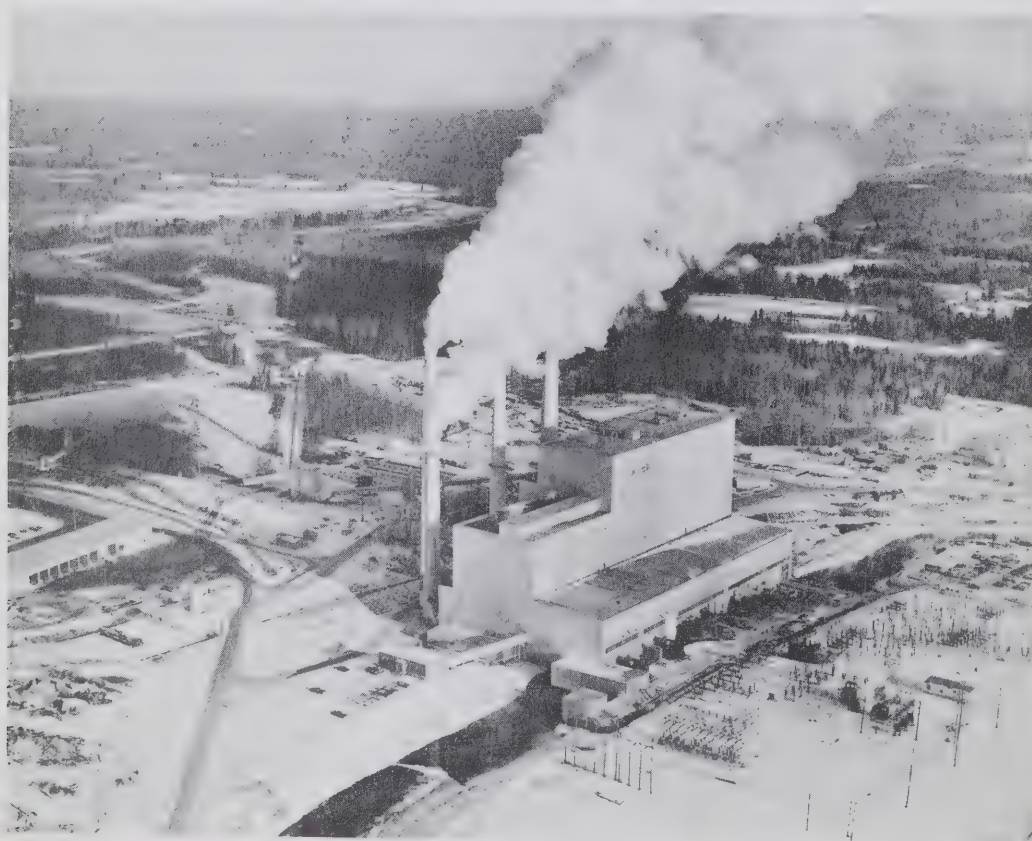
1,110,239

819,526

Canada

24,981,580

The 582,000-kw. thermal station at Wabamun, Alberta.



THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Burrard	Vancouver	BCHPA	1962	1967	Gas, oil	S	5	162,000	810,000
2	Port Mann	New Westminster	BCHPA	1959	1959	Oil	GT	4	25,000	100,000
3	Georgia	Chemainus	BCHPA	1958	1959	Oil	GT	2 2	19,750 18,000	75,500
4	Powell River	Powell River	MBPR	1948	1967	Wood-waste, oil	S	1 1 1 1 1	1,350 1,200 10,500 1,875 36,000	50,925
5	Watson Island	Watson Island	CCC	1950	1966	Oil, wood-waste	S	2 1	7,500 34,600	49,600
6	Harmac	Nanaimo	MBPR	1954	1963	Oil, wood-waste	S	1 1 1	31,500 4,000 1,250	36,750
7	Tide Lake	Tide Lake	GOC					2	15,000	30,000
8	Somass Mill	Port Alberni	MBPR	1963	-	Wood-waste	S	1	26,000	26,000
9	Chetwynd	Chetwynd	BCHPA	1958	1968	Oil	IC	2 1 1 4 2	600 800 1,000 3,000 5,000	25,000
10	Dawson Creek	Dawson Creek	BCHPA	1953	1963	Gas, oil	IC	2 6	1,000 3,000	20,000
11	Port Alice	Port Alice	RC	1942	1957	Oil, wood-waste	S	1 2 1	3,200 3,500 6,000	16,200
12	Prince George	Prince George	BCHPA	1957	1963	Oil	IC	5	3,000	15,000
13	Ocean Falls	Ocean Falls	CZC	1930	1950	Oil, wood-waste	S	1 1 1 1	3,000 2,000 4,000 5,000	14,000
14	New Westminster	New Westminster	CZB	1912	1950	Wood-waste	S	1 1 1	5,000 1,500 6,000	12,500
15	Eburne Sawmills	Vancouver	CFP	1960	1960	Wood-waste	S	2	5,750	11,500
16	Dry Dock	Prince Rupert	BCHPA	1950	1967	Oil	IC	3 1 1 1	799 1,970 2,034 5,000	11,401
17	Mica Creek	Mica	BCHPA	1965	1965	Oil	IC	1 2 1 2	675 1,000 2,500 3,000	11,175

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
18	Tasu	Tasu	WFM	1967	1967		IC	5	2,210	11,050
19	Youbou	Youbou	BCFP	1929	1967	Wood-waste	S	1 2 1 1	800 750 2,000 5,000	9,300
20	Tahsis	Tahsis	TCL	1956	1960	Coal	S	1 1	5,000 3,000	8,000
21	McMahon	Taylor	PP	1957	1957	Gas	S	3	2,500	7,500
22	Golden	Golden	KHFP	1966	-	Coal		1	7,500	7,500
23	Kelowna	Kelowna	SMS	1950	1963	Wood-waste, oil, coal	S	1 1 1 1	750 2,000 3,500 1,000	7,250
24	Woodfibre	Woodfibre	RC	1948	1961	Oil, wood-waste	S	2 1	2,000 3,000	7,000
25	Smithers	Smithers	BCHPA	1951	1965	Oil	IC	2 1 2 1	560 760 1,000 3,000	6,880
26	Port Moody	Port Moody	WCL	1958	1965	Coal	S	1 1	3,500 3,000	6,500
27	Kitimat	Kitimat	ALCAN	1954	1955	Oil	IC	5	1,000	5,000
28	Port Mellon	Port Mellon	CFP	1928	1947	Oil	S	1 1 1	500 1,500 3,000	5,000
29	Cassiar	Cassiar	CAC	1952	1966	Oil	IC	3 2 1 1 1 1	300 350 450 650 900 1,200	4,800
30	Vancouver	Vancouver	MBPR	1949	1956	Wood-waste	S	1 1	750 4,000	4,750
31	Kimberley (Stand-by)	Kimberley	CMSC	1927	1928	Coal	S	3	1,500	4,500
32	Victoria	Victoria	BCFP	1940	1950	Wood-waste	S	1 1	3,000 1,500	4,500
33	Giscome	Giscome	ELS	1951	1956	Wood-waste	S	1 1	1,500 2,400	
34	Burns Lake	Burns Lake	BCHPA	1954	1965	oil	IC	1	300	4,200
						Oil	IC	1 4 2	800 250 1,136	4,072

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
BRITISH COLUMBIA (Cont'd)										
35	Elk Falls	Campbell River	EFC	1964	1965	Wood-waste	S	1 1	3,255 800	4,055
36	Hammond	Hammond	BCFP	1928	1929	Wood-waste	S	2	2,000	4,000
37	Chemainus	Chemainus	MBPR	1925	1950	Wood-waste	S	1 1	3,000 750	3,750
38	Vancouver	Vancouver	BCSRC	1947	1960	Gas, oil	S	3	1,250	3,750
39	Jedway	Jedway	JIOC	-	-	Oil	IC	3 1	1,000 225	3,225
40	Fort Nelson	Fort Nelson	BCHPA	1960	1960	Oil, gas	IC	1 1 1 1 1	1,200 600 261 100 1,000	3,161
41	Golden	Golden	BCHPA	1968	1968	Oil	IC	2	1,500	3,000
42	Honeymoon Bay	Honeymoon Bay	WFI	1949	1961	Oil	S	1 1	1,000 1,760	2,760
43	Port Hardy	Port Hardy	BCHPA	1959	1965	Oil	IC	1 1 2 1	600 500 300 1,000	2,700
44	Celgar Pulp Mill	Celgar Pulp Mill	CCC	1963	-		S	1	2,500	2,500
45	Mesachie Lake	Mesachie Lake	HLC	1943	1949	Wood-waste	S	1 1	1,600 750	2,350
46	Tide Camp	Stewart	GM	1965	1967	Oil	IC	3 2	500 400	2,300
47	Endako	Endako	EM	1964	1964	Oil	IC	1 1	1,250 1,000	2,250
48	Hazelton	Hazelton	BCHPA	1965	1965	Oil	IC	3 2 1	200 600 250	2,050
49	Revelstoke	Revelstoke	COR	1926	1954	Oil	IC	2 1 1	300 400 1,000	2,000
50	Hazelton	Hazelton	HSL	1963	1965	Oil	IC	1 1	1,500 350	1,850
51	McBride	McBride	BCHPA	1951	1957	Oil, gas	IC	3	600	1,800
52	Sandspit	Queen Charlotte Islands	BCHPA	1962	1966	Oil	IC	2 1	600 500	1,700
53	Zeballos Mines	Zeballos Mines	ZIM	1962	1964	Oil	IC	2 1	300 1,000	1,600

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

BRITISH COLUMBIA (Cont'd)

54	Bella Coola	Bella Coola	BCHPA	1955	1968	Oil	IC	1	96	1,557
								2	100	
								1	150	
								1	261	
								1	350	
								1	500	
55	Valemount	Valemount	BCHPA	1962	1966	Oil	IC	3	350	1,550
								1	500	
56	Prince George	Prince George	NP	1967	-			1	1,500	1,500

Total capacity of plants 1,500 kw. and over (not listed above)

7,500

Total capacity of plants under 1,500 kw.

35,150

Total (all plants)

1,521,411

Northwest Territories

1	Inuvik	Inuvik	NCPC	1957	1967	Oil	IC	2	375	4,460
								1	150	
								1	960	
								2	1,000	
2	Frobisher Bay	Frobisher Bay	NCPC	1963	1966	Oil	IC	1	600	3,960
								1	1,000	
								1	960	
3	Port Radium	Port Radium	EMR	1936	1953	Oil	IC	1	500	3,639
								GT	1,500	
								2	150	
								1	864	
								2	650	
								2	400	
4	Hay River	Hay River	NUJ	1959	1967	Oil	IC	1	175	2,850
								1	200	
								2	350	
								1	650	
5	Fort Smith	Fort Smith	NCPC	1956	1962	Oil	IC	3	500	2,232
								1	280	
								1	600	
								1	392	
6	Tungsten	Tungsten	CTMC	1962	1962	Oil	IC	1	960	1,500
								3	500	

Total capacity of plants 1,500 kw. and over (not listed above)

12,600

Total capacity of plants under 1,500 kw.

Total (all plants)

31,241

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

Yukon Territory

1	Whitehorse	Whitehorse	NCPC	1968	1968	Oil	IC	1	5,150	9,070
								1	3,920	
2	Whitehorse	Whitehorse	YEC	-	1968					1,800

Total capacity of plants 1,500 kw. and over (not listed above)

Total capacity of plants under 1,500 kw. 5,840

Total (all plants) 16,710

Alberta

1	Wabamun	Wabamun	CP	1956	1967	Gas, coal	S	2	66,000	582,000
								1	150,000	
								1	300,000	
2	Rosedale	Edmonton	CE	1939	1966	Gas, oil	S	2	15,000	405,000
								3	30,000	
								2	75,000	
							GT	2	30,000	
							S	1	75,000	66,000
3	Battle River	Forestburg	CU	1956	1964	Coal, oil	S	2	33,000	
4	Tar Island	Fort McMurray	GCOS	1966	1967	Coke	S	2	32,500	65,000
5	Medicine Hat	Medicine Hat	CMH	1929	1953	Gas	S	1	3,000	38,000
								1	5,000	
								1	30,000	
6	Lethbridge	Lethbridge	CL	1931	1961	Gas	S	1	3,375	33,375
								2	5,000	
							GT	2	10,000	30,000
7	Rainbow Lake	Rainbow Lake	NU	1968	-	Gas	GT	1	30,000	
8	Hinton	Hinton	NWPP	1956	1957	Gas, wood-waste, oil	S	1	21,760	23,860
							IC	1	1,100	
								1	1,000	22,000
9	Clover Bar	Edmonton	C	1953	1966	Gas	S	3	6,000	
								1	4,000	20,000
10	Simonette	Simonette	CU	1966		Flare gas	GT	1	20,000	
11	Sturgeon	Valleyview	CU	1958	1961	Flare gas	GT	1	10,000	18,500
								1	8,500	
12	Drumheller	Drumheller	CU	1928	1952	Coal	S	2	7,500	17,500
								1	2,500	

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
13	Two Hills	Duvernay	WC	1953	1958	Gas	S	3 1	300 1,200	
							IC	6	500	
							GT	1	8,437	13,537
14	Sentinel	Coleman	CP	1927	1929	Coal	S	2	5,000	10,000
15	South Power Plant	Edmonton	DPWA	1959	1963	Gas	GT	1	2,100	
							S	1 1	5,000 2,200	9,300
16	Fairview	Fairview	NU	1954	1960	Gas	IC	3	3,000	9,000
17	Vermilion	Vermilion	CU	1948	1961	Gas	S	4	2,250	9,000
18	Taber	Taber	CSF	1950	1967	Gas, oil	S	1 1 1	2,000 1,675 4,300	7,975
19	Fort McMurray	Fort McMurray	CU	1954	1968	Oil	IC	4 2 1 1	500 1,200 2,500 650	7,550
20	Fort Saskatchewan	Fort Saskatchewan	SGM	1954	1959	Gas	S	2	2,500	5,000
21	Whitecourt	Whitecourt	PAPC	1958	1964	Gas	IC	2 5	300 800	4,600
22	Rimbey	Rimbey	BA	1960	1963	Gas	S	4	1,000	4,000
23	Jasper	Jasper	NU	1941	1968	Oil	IC	1 1 1 2 1	1,200 475 850 500 300	3,825
24	Glenmore Filter Plant	Calgary	COC	1965	1965		S	2	1,800	3,600
25	Picture Butte	Picture Butte	CSI	1936	1968	Gas	S	1 2	1,250 750	2,750
26	Foot Hills Hospital	Calgary		1965	1965		S	2	1,000	
							IC	1	450	2,450
27	Edmonton	Legislative Bldg.	DPWA	1953	1965	Gas	S	2 1	800 500	2,100
28	Zama Lake	Zama Lake	NU	1968	1968		IC	2 1 2	600 500 75	1,850
29	West Whitecourt	West Whitecourt	PAPC	1968			IC			1,600

Total capacity of plants 1,500 kw. and over (not listed above) 4,000

Total capacity of plants under 1,500 kw. 15,855

Total (all plants) 1,439,227

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

Saskatchewan

1	Queen Elizabeth	Saskatoon	SPC	1958	1959	Gas, oil coal	S	1 1	66,000 75,000	141,000
2	Boundary Dam	Estevan	SPC	1959	1960	Coal	S	2	66,000	132,000
3	A.L. Cole	Saskatoon	SPC	1929	1957	Coal, oil, gas	S	1 1 2 1	10,000 15,000 25,000 30,000	105,000
4	Regina	Regina	SPC	1925	1960	Oil, gas	S	1 1 1 1	15,000 5,000 20,000 30,000	
							GT	1	23,360	93,360
5	Estevan	Estevan	SPC	1929	1957	Coal, gas	S	1 1 1 1	5,000 15,000 20,000 30,000	70,000
6	Success	Success	SPC	1967	1967	Gas	GT	3	11,840	35,520
7	Kindersley	Kindersley	SPC	1955	1958	Gas	IC	3	3,000	
							GT	2	10,000	29,000
8	Moose Jaw	Moose Jaw	SPC	1930	1952	Oil, gas	S	1 1	10,000 15,000	25,000
9	Kalium	Kalium	KC	1964	1964	Gas	S	2	7,500	15,000
10	Swift Current	Swift Current	SPC	1954	1957	Oil	IC	2 4	1,275 3,000	14,550
11	Eldorado	Eldorado	EN	1952	1956	Oil	IC	4	2,250	9,000
12	Flin Flon	Flin Flon (Saskatchewan)	HBMS	1929	1951	Coal, oil	S	1 1	1,000 6,000	7,000
13	La Ronge	La Ronge	SPC	1953	1960	Oil	IC	2 2 1 1	50 100 350 1,000	1,650

Total capacity of plants 1,500 kw. and over (not listed above) 10,000

Total capacity of plants under 1,500 kw. 3,017

Total (all plants) 691,097

Manitoba

1	Selkirk	Selkirk	MH	1960	1967	Coal, oil	S	2	66,000	
							GT	2	11,900	155,800

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
MANITOBA (Cont'd)										
2	Brandon	Brandon	MH	1957	1958	Coal, gas, oil	S	4	33,000	132,000
3	Amy Street	Winnipeg	WH	1924	1954	Coal	S	2 1 1	5,000 15,000 25,000	50,000
4	The Pas	The Pas	MH	1948	1962	Oil	IC	1 4 1 1	1,100 1,000 750 400	6,250
5	Fort Churchill	Fort Churchill	DPW	1949	1963	Oil	IC	3 4 3	200 300 1,136	5,208
6	Fort Garry	Winnipeg	MSC	1940	1953	Oil	S	1 1	1,500 2,500	4,000
7	Churchill	Churchill	NHB	1931	1955	Grain refuse, oil, coal	S	1 1 1	1,500 600 1,250	
							IC	1 1	200 250	3,800
8	Thompson	Thompson	INCO		1958	Oil	IC	2	1,500	3,000
Total capacity of plants 1,500 kw. and over (not listed above)										10,160
Total capacity of plants under 1,500 kw.										4,421
Total (all plants)										374,639

Ontario

1	Lakeview	Toronto	HEPCO	1961	1966	Coal	S	8	300,000	
						Oil	CT	4	7,500	2,430,000
2	Richard L. Hearn	Toronto	HEPCO	1951	1966	Coal	S	4 4	100,000 200,000	
						Oil	CT	4	7,500	1,230,000
3	J. Clark Keith	Windsor	HEPCO	1951	1967	Coal	S	4	66,000	
						Oil	CT	1	7,500	271,500
4	Douglas Point	Kincardine	HEPCO	1966	-	Uranium dioxide	S	1	200,000	200,000
5	Thunder Bay	Fort William	HEPCO	1963	-	Coal	S	1	100,000	
							CT	2	14,150	128,300
6	Detweiler	Kitchener	HEPCO	1967	1967	Oil	CT	4	16,320	65,280

CT - Combustion Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
7	A.W. Manby	Toronto	HEPCO	1965	1966	Oil	CT	4	16,320	65,280
8	Windsor	Windsor	FMCC	1936	1952	Coal	S	1 1 2	10,000 4,000 25,000	64,000
9	Sarnia-Scott	Sarnia	HEPCO	1965	1966	Oil	CT	2 2	15,000 16,320	62,640
10	Sarnia	Sarnia	PC	1943	1956	Coal, oil	S	1 1 1 1	10,000 5,000 4,000 13,200	32,280
11	Lambton	Sarnia	HEPCO	1967	1967	Oil	CT	4	7,500	30,000
12	Sault Ste. Marie	Sault Ste. Marie	ASC	1942	1963	Gas, oil coal	S	2 2	12,500 625	26,250
13	Fort William	Fort William	GLPAC	1928	-	Gas, coal, wood- waste	S	1 1 1	4,000 5,000 17,100	26,100
14	Kapuskasing	Kapuskasing	SFPPC	1928	1958	Coal, gas, wood- waste	S	2 1 1	650 12,500 9,100	22,900
15	Nuclear Power De- monstration Unit	Rolphton	AECL	1962	-	Uranium dioxide	S	1	20,000	20,000
16	Marathon	Marathon	ACC	1946	1948	Coal, oil	S	1 2	7,500 4,000	15,500
17	Amherstburg	Amherstburg	ACCL	1938	1957	Coal	S	1 1 1	2,500 4,700 3,750	10,950
18	Hamilton	Hamilton	SCC	1948	1959	Coke oven, gas, oil	S	1 1	4,000 6,000	10,000
19	Thorold	Thorold	OPC	1937	1937	Coal, gas	S	2	4,000	8,000
20	Dryden	Dryden	DPC	1954	-	Coal, gas	S	1	6,000	6,000
21	Station No. 6	Gananoque	GELW	1959	1967	Gas	IC	2 1 1	1,360 1,200 1,250	5,170
22	Walkerville	Walkerville	HWS	1924	1955	Coal	S	2 1 1	1,000 2,500 625	5,125
23	Strathcona	Strathcona	SP	1955	1955	Coal	S	2	1,655	3,310
24	Chatham	Chatham	CDSC	1946	1946	Coal	S	2	1,500	3,000
25	Fort Frances	Fort Frances	OMPP	1927	-	Coal	S	1	3,000	3,000

CT - Combustion Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

ONTARIO (Cont'd)

26	Blind River	Blind River	MFLG	1927	1927	Wood-waste	S	1 1	750 2,000	2,750
27	Toronto	Toronto	CDSC	1959	-	Coal, gas, oil	S	1	2,500	2,500
28	Toronto	Toronto	CCCC	1937	-	Coal, oil	S	1	2,500	2,500
29	Ottawa	Ottawa	EBEC	1923	-	Coal	S	1	2,500	2,500
30	Port Arthur	Port Arthur	APPC	1928	-	Coal, wood-waste, gas	S	1	2,500	2,500
31	New Toronto	New Toronto	GTR	1940	-	Coal, oil	S	1	2,500	2,500
32	Pembroke	Pembroke	PELC	1929	1949	Oil	IC	1 2	933 671	2,275
33	Orillia	Orillia	OWLP	1947	1948	Oil	IC	1 1	1,000 1,136	2,136
34	Cardinal	Cardinal	CSC	1945	1964	Oil	IC	3 1 1	320 640 500	2,100
35	Peterborough	Peterborough	CGEC	1930	1949	Coal	S	1	2,000	2,000
36	Espanola	Espanola	KVPC	1947	1951	Coal	S	1	2,000	2,000

Total capacity of plants 1,500 kw. and over (not listed above) 99,250

Total capacity of plants under 1,500 kw. 10,500

Total (all plants) 4,880,096

Quebec

1	Tracy	Tracy	QHEC	1964	1968	Oil	S	4	150,000	600,000
2	Les Boules	Les Boules	QHEC	1955	1960	Oil	GT	6	6,000	36,000
3	Kenogami Mill	Kenogami	PCL	1967	-	Oil	S	1	14,750	14,750
4	Chandler	Chandler	GPP	1930	1954	Oil	S	1 1 1	6,000 2,500 4,000	12,500
5	Noranda	Noranda	NM	1934	1957	Waste heat	S	1 1 1	2,600 3,000 4,500	10,100

GT - Gas Turbine, IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
QUEBEC (Cont'd)										
6	Cap aux Meules	Iles-de-la-Madeleine	QHEC	1953	1964	Oil	IC	1 3 1 2	1,065 1,000 1,200 2,200	9,665
7	Drummondville	Drummondville	CCL	1955	1953	Coal, oil	S	1 1 1 1	1,500 2,500 3,500 2,000	9,500
8	Murdochville	Murdochville	GCM	1952	1955	Oil, waste heat	S IC	1 2 1	5,400 1,000 300	7,700
9	Thurso	Thurso	TPPC	1957	-	Coal, oil wood-waste	S	1	7,500	7,500
10	Quebec City	Quebec City	ACPP	1927	-	Oil	S	1	6,000	6,000
11	Magog	Magog	DTC	1938	1948	Coal	S	2	2,000	4,000
12	Montreal	Montreal	CDSC	1925	1947	Gas, oil	S	2 1	1,000 1,500	3,500
13	Gatineau	Gatineau	CIPC	1927	1960	Oil, wood-waste	S	4	750	3,000
14	Schefferville	Schefferville	IOCC	1956	1956	Oil	IC	3	1,000	3,000
15	Three Rivers	Three Rivers	CIPC	1922	1925	Oil, wood-waste	S	6	500	3,000
16	Havre St. Pierre	Havre St. Pierre	REC	1950	1963	Oil	IC	1 1 3	1,000 500 300	2,400
17	Port and Terminal (Stand-by)	Port Cartier	QCMC	1960	1960	Oil	IC	2	1,000	2,000
18	Lac Jeannine (Stand-by)	Gagnon	QCMC	1960	1960	Oil	IC	2	1,000	2,000
19	Havre St. Pierre	Havre St. Pierre	QHEC	1967	-	Oil	IC	2	1,000	2,000
20	Desmaraisville	Desmaraisville	CM	1960	1964			13 1	136 152	1,920
21	Rivière-du-Loup	Rivière-du-Loup	CRL	1947	1953	Oil	IC	2 1	240 1,360	1,840
22	Blanc Sablon	Blanc Sablon	QHEC	1965	1967	Oil	IC	2 1	600 350	1,550

Total capacity of plants 1,500 kw. and over (not listed above) 7,250

Total capacity of plants under 1,500 kw. 13,425

Total (all plants) 764,600

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
1	Courtenay Bay	East Saint John	NBEP	1961	1967	Oil	S	1 1 2	50,000 13,365 110,000	283,365
2	Grand Lake No. 2	Newcastle Creek	NBEP	1951	1963	Coal	S	2 1 1	5,000 15,000 60,000	85,000
3	Chatham	Chatham	NBEP	1948	1956	Coal, oil	S	1 1	12,500 20,000	32,500
4	Lancaster	Lancaster	IPP	1947	1960	Oil	S	1 1 1	2,000 10,000 12,500	24,500
5	Bathurst	Bathurst	CB	1937	1958	Coal, oil	S	1 1 1	6,000 7,600 7,000	20,600
6	Edmundston	Edmundston	FC	1949	1958	Coal, wood- waste	S	1 1 1	3,000 3,800 12,500	19,300
7	Dalhousie	Dalhousie	NBIPC	1929	1937	Coal	S	1 1 2 2	6,000 8,000 800 750	17,100
8	Dock Street	Saint John	NBEP	1929	1947	Coal, oil	S	1 1	6,000 10,000	16,000
9	Newcastle	Newcastle	FC	-	1967	Coal	S	1	15,625	15,625
10	Grand Lake No. 1	Newcastle Creek	NBEP	1931	1944	Coal	S	1 1	6,250 7,500	13,750
11	Atholville	Atholville	FC	1929	1956	Coal, wood- waste	S	3 1 1	1,000 2,000 5,000	10,000
12	Saint John	Saint John	ASR	1954	1962	Oil	S	1 1	2,500 1,000	3,500
13	Edmundston	Edmundston	ME	1947	1955	Oil	IC	2 1	690 1,876	3,256
14	Campbellton	Campbellton	CC	1946	1953	Oil	IC	1 1 1	240 1,136 1,360	2,736
15	Grand Manan	Grand Manan	NBEP	1957	1966	Oil	IC	1 1 2 1	200 250 700 503	2,353

Total capacity of plants 1,500 kw. and over (not listed above)

Total capacity of plants under 1,500 kw.

2,000

Total (all plants)

551,585

IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.
Nova Scotia										
1	Lower Water Street	Halifax	NSLPC	1944	1959	Coal, oil	S	1 2 1 2	12,500 20,000 25,000 45,000	167,500
2	Glace Bay	Glace Bay	NSPC	1932	1966	Coal	S	2 4 1	6,000 15,000 36,000	108,000
3	Tufts Cove	Tufts Cove	NSLPC	1965	-		S	1	100,000	100,000
4	Trenton	Trenton	NSPC	1951	1959	Coal	S	2 2	10,000 20,000	60,000
5	Sydney	Sydney	DOSCO	1919	1943	Coal, oil, gas	S	1 2 1 1	7,600 3,000 5,000 16,000	34,600
6	Harrison Lake	Maccan	NSPC	1926	1949	Coal	S	1 1 1 1	15,000 6,000 1,500 4,000	26,500
7	Abercrombie Point	Abercrombie Point	SMP	1967	-			1	18,750	18,750
8	Port Hawkesbury	Point Tupper	NSP	1962	-	Coal	S	1	10,000	10,000
9	Brooklyn	Brooklyn	BMPC	1943	-	Oil, wood-waste	S	1	5,170	5,170
10	Dartmouth	Dartmouth	IOC	1965	-	Oil	S	1	3,750	3,750
11	King Street	Yarmouth	NSLPC	1937	1948	Oil	IC	1 1 2	320 400 600	1,920
Total capacity of plants 1,500 kw. and over (not listed above)										5,200
Total capacity of plants under 1,500 kw.										2,070
Total (all plants)										543,460

Prince Edward Island

1	Charlottetown	Charlottetown	MEC	1931	1963	Oil	S	1 1 2 1 2	1,500 4,000 7,500 10,000 20,000	70,500
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IC - Internal Combustion, S - Steam

THERMAL

No.	Station	Location	Owner	Year Installed		Fuel	Type of Prime Mover	Generators		
				First Unit	Latest Unit			No.	Unit Capacity kw.	Total Capacity kw.

PRINCE EDWARD ISLAND (Cont'd)

2	Summerside	Summerside	MS	1940	1963	Oil	IC	1	200	6,890
								2	250	
								1	555	
								1	1,135	
								2	2,250	

Total capacity of plants 1,500 kw. and over (not listed above)

Total capacity of plants under 1,500 kw.

Total (all plants)

77,390

Newfoundland

1	St. John's	St. John's	NLPC	1957	1959	Oil	S	1	10,000	30,000
								1	20,000	
2	Salt Pond	Salt Pond	NLPC	1964	1968	Oil	IC	3	500	15,900
								1	14,400	
3	Control Centre	Holyrood	NPC	1966	-	Gas	GT	1	14,150	14,150
4	Grand Falls	Grand Falls	PPP	1930	1931	Oil	S	2	5,000	10,000
5	Corner Brook	Corner Brook	BPC	1957	-	Oil	S	1	6,600	6,600
6	Tilt Cove	Tilt Cove	TCPC	1960	-	Oil	S	1	5,000	5,000
7	Wabush Lake	Wabush Lake	WM	-	1963	Oil	IC	4	1,000	4,000
8	Goose Bay	Goose Bay	DOT	1952	1959	Oil	IC	4	750	4,000
								1	1,000	
9	Labrador City	Carol Lake	IOCC			Oil				3,910
10	Palmquist	Gander	DOT	1948	1962	Oil	IC	3	1,000	3,000
11	Happy Valley	Goose Bay	NLPC	1967	1967	Oil	IC	2	1,100	2,700
								2	250	
12	Port aux Basques	Port aux Basques	NLPC	1945	1964	Oil	IC	2	350	2,539
								3	250	
								1	280	
								2	300	
								1	209	
13	St. John's	St. John's	NLPC	1956	-	Oil	IC	1	2,500	2,500

Total capacity of plants 1,500 kw. and over (not listed above)

4,000

Total capacity of plants under 1,500 kw.

17,327

Total (all plants)

125,626

Canada

11,016,082

GT - Gas Turbine, IC - Internal Combustion, S - Steam

OWNER CODE INDEX

This index provides an explanation of the code letters used in the "Owner" column of the preceding tables. The following abbreviations are used for the names of the provinces and territories of Canada:

British Columbia.....BC
Alberta.....Alta
Saskatchewan.....Sask
Manitoba.....Man
Ontario.....Ont
Québec.....Qué

New Brunswick.....NB
Nova Scotia.....NS
Prince Edward Island.....PEI
Newfoundland.....Nfld
Yukon Territory.....YT
Northwest Territories...NWT

CODE	OWNER	DEVELOPMENTS LOCATED IN
ACC.	American Can of Canada Limited	Ont
ACCL.	Allied Chemical Canada Limited	Ont
ACL.	Anaconda Company (Canada) Limited.	BC
ACPP.	Anglo-Canadian Pulp and Paper Mills Limited.	Qué
AECI.	Atomic Energy of Canada Limited.	Ont
AL.	Ayers Limited.	Qué
ALCAN.	Aluminum Company of Canada Limited	BC, Qué
APPC.	Abitibi Power and Paper Company Limited.	Ont
ASC.	Algoma Steel Corporation Limited	Ont
ASR.	Atlantic Sugar Refineries.	NB
ASRC.	American Smelting and Refining Company Limited	Nfld
BA.	British American Oil Company	Alta
BCFP.	British Columbia Forest Products Limited	BC
BCIPA.	British Columbia Hydro and Power Authority	BC
BCSRC.	British Columbia Sugar Refining Company Limited.	BC
BMPC.	Bowaters Mersey Paper Company Limited.	NS
BPC.	Bowater Power Company Limited.	Nfld
C.	Chemsell (1963) Limited.	Alta
CAC.	Cassiar Asbestos Corporation Limited	BC
CB.	Consolidated-Bathurst Limited.	NB
CC.	City of Campbellton.	NB
CCC.	Columbia Cellulose Company Limited	BC
CCCC.	Continental Can Company of Canada Limited.	Ont
CCL.	Canadian Celanese Limited.	Qué
CDSC.	Canada and Dominion Sugar Company Limited.	Ont, Qué
CE.	City of Edmonton	Alta
CFP.	Canadian Forest Products Limited	BC
CGEC.	Canadian General Electric Company Limited.	Ont
CIPC.	Canadian International Paper Company	Qué
CL.	City of Lethbridge	Alta
CM.	Coniagas Mines Limited	Qué
CMH.	City of Medicine Hat	Alta
CMSC.	Cominco Limited.	Sask, BC, NWT
CN.	City of Nelson	BC
CNPC.	Canadian Niagara Power Company Limited	Ont
COC.	City of Calgary.	Alta
COR.	City of Revelstoke	BC
CP.	Calgary Power Ltd.	Alta
CPUC.	Campbellford Public Utilities Commission	Ont
CRL.	City of Rivière-du-Loup.	Qué
CRPC.	Churchill River Power Company.	Sask
CS.	City of Sherbrooke	Qué
CSC.	Canada Starch Company Limited.	Ont
CSF.	Canadian Sugar Factories Limited	Alta
CTMC.	Canada Tungsten Mining Corporation Limited	NWT
CU.	Canadian Utilities Limited	Alta
CZB.	Crown Zellerbach Building Materials Limited.	BC
CZC.	Crown Zellerbach Canada Limited.	BC
DOSCO.	Dominion Iron and Steel Company Limited.	NS
DOT.	Department of Transport, Government of Canada.	Nfld
DP.	Donnacona Paper Company.	Qué
DPC.	Dryden Paper Company Limited	Ont
DPP.	Domtar Pulp and Paper Company Limited.	Qué
DPW.	Department of Public Works, Government of Canada	Man., Ont
DPWA.	Department of Public Works, Government of Alberta.	Alta

CODE	OWNER	DEVELOPMENTS LOCATED IN
EBEC	E. B. Eddy Company	Ont, Qué
EFC.	Elk Falls Company Limited.	BC
ELS.	Eagle Lake Sawmills Company Limited.	BC
EM	Endako Mines Limited	BC
EMR.	Eldorado Mining and Refining Limited	NWT, Sask
EN	Eldorado Nuclear Limited	Sask
ERC.	Electric Reduction Company	Qué
FC	Fraser Companies Limited	NB
FMCC	Ford Motor Company of Canada Limited	Ont
GCM.	Gaspé Copper Mines Limited	Qué
GCOS	Great Canadian Oil Sands Limited	Alta
GELW	Gananoque Electric Light and Water Supply Co. Ltd.	Ont
GLPAC.	Great Lakes Paper Company.	Ont
GLPC	Great Lakes Power Corporation Limited.	Ont
GM	Granduc Mines Limited.	BC
GPC.	Gulf Power Company	Qué
GPP.	Gaspesia Pulp and Paper Company Limited.	Qué
GTR.	Goodyear Tire and Rubber Company Limited	Ont
HBMS	Hudson Bay Mining and Smelting Company Limited	Sask
HCL.	Huronian Company Limited	Ont
HEPCO.	Hydro-Electric Commission of Ontario	Ont
HJP.	Hart Jaune Power Company	Qué
HLC.	Hillcrest Lumber Company Limited	BC
HSL.	Hazelton Sawmills Limited.	BC
HWS.	Hiram Walker and Sons Limited.	Ont
INCO	International Nickel Company of Canada Limited	Man
IOC.	Imperial Oil Limited	NS
IOCC	Iron Ore Company of Canada	Qué, Nfld
IPP.	Irving Pulp and Paper Limited.	NB
JIOC	Jedway Iron Ore Company Limited.	BC
JMC.	James MacLaren Company Limited	Qué
KC	Kalium Chemicals Limited	Sask
KHFP	Kicking Horse Forest Products Limited.	BC
KVPC	Kalamazoo Vegetable Parchment Company Limited.	Ont
LMC.	Lorraine Mining Company Limited.	Qué
MBPP	Minas Basin Pulp and Power Company	NS
MBPR	MacMillan Bloedel and Powell River Limited	BC
ME	Municipality of Edmundston	NB
MEC.	Maritime Electric Company Limited.	PEI
MFLC	McFadden Lumber Co. (Domtar)	Ont
MH	Manitoba Hydro	Man
MJ	Municipality of Jonquière.	Qué
MNBP	Main and New Brunswick Electrical Power Co. Ltd.	NB
MP	Manicouagan Power Company.	Qué
MQPC	MacLaren-Québec Power Company.	Qué
MS	Municipality of Summerside	PEI
MSC.	Manitoba Sugar Company Limited	Man

CODE	OWNER	DEVELOPMENTS LOCATED IN
NBEPC.	New Brunswick Electric Power Commission.	NB
NBIPC.	New Brunswick International Paper Company Limited.	NB
NCPC.	Northern Canada Power Commission	YT, NWT
NHB.	National Harbours Board, Government of Canada.	Man
NLPC.	Newfoundland Light and Power Co. Limited	Nfld
NM.	Noranda Mines Limited.	Qué
NP.	Northwood Pulp Company	BC
NPC.	Newfoundland and Labrador Power Commission	Nfld
NSLPC.	Nova Scotia Light and Power Company Limited.	NS
NSP.	Nova Scotia Pulp Limited	NS
NSPC.	Nova Scotia Power Commission	NS
NU.	Northland Utilities Limited.	Alta
NWPP.	North Western Pulp and Power Limited	Alta
OFM.	Ogilvie Flour Mills.	Qué
OHEC.	Ottawa Hydro-Electric Commission	Ont
OMPP.	Ontario-Minnesota Pulp and Paper Company Limited	Ont
OPC.	Ontario Paper Company.	Ont
OVPC.	Ottawa Valley Power Company.	Qué
OWLP.	Orillia Water Light and Power Commission	Ont
PAPC.	Pan American Petroleum Corporation	Alta
PAPUC.	Port Arthur Public Utilities Commission.	Ont
PCL.	Price Company Limited.	Qué
PC.	Polymer Corporation.	Ont
PELC.	Pembroke Electric Light Company Limited.	Qué, Ont
PHPC.	Peterborough Hydraulic Power Company	Ont
PP.	Pacific Petroleum Company Limited (now West Coast Trans- mission Company)	BC
PPP.	Price (Nfld) Pulp and Paper Limited.	Nfld.
QCMC.	Québec Cartier Mining Company.	Qué
QHEC.	Québec Hydro-Electric Commission	Qué
QNSPC.	Québec-North Shore Paper Company	Qué
RC.	Rayonier Canada (BC) Limited	BC
REC.	Romaine Electric Company Limited	Qué
SAPC.	Saguenay Power Company	Qué
SCC.	Steel Company of Canada Limited.	Ont
SEPPC.	Spruce Falls Power and Paper Company	Ont
SGM.	Sherritt-Gordon Mines Limited.	Man, Alta
SMP.	Scott Maritimes Pulp Limited	NS
SMPC.	Smelter Power Corporation.	Qué
SMS.	S. M. Simpson Limited.	BC
SP.	Strathcona Paper Company Limited	Ont
SPC.	Saskatchewan Power Corporation	Sask
STLSA.	St. Lawrence Seaway Authority.	Ont
TCL.	Tahsis Company Limited	BC
TCPC.	Tilt Cove Power Corporation.	Nfld
TFPC.	Twin Falls Corporation Limited	Nfld
TPPC.	Thurso Pulp and Paper Company.	Qué

CODE	OWNER	DEVELOPMENTS LOCATED IN
WC	Western Chemicals Limited.	Alta
WCL.	Weldwood of Canada Limited	BC
WCPC	West Coast Power Company Limited	Nfld
WFI.	Western Forest Industries Limited.	BC
WFM.	Wesfrob Mines Limited.	BC
WH.	Winnipeg Hydro	Man
WKPL	West Kootenay Power and Light Company Limited.	BC
WM	Western Mines Limited.	BC
WML.	Wabush Mines Limited	Nfld
YEC.	Yukon Electrical Company Limited	YT
ZIM.	Zeballos Iron Mines Limited.	BC



LEGEND

TRANSMISSION LINES

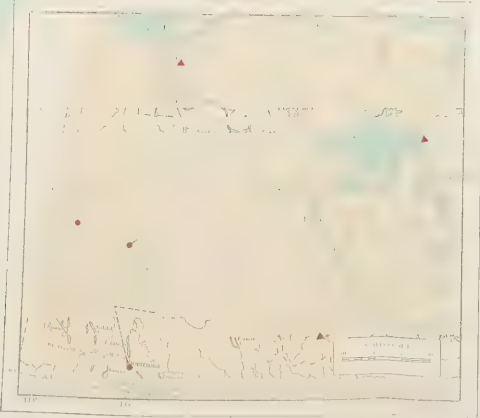
EXISTING UNDER CONSTRUCTION

66 KV - 138 KV ---
200 KV - 239 KV ---
300 KV - 335 KV ---
400 KV AND OVER ---

GENERATING STATIONS

WIND-ELECTRIC △
THERMAL-ELECTRIC □

NOTE: ONLY STATIONS WITH TOTAL INSTALLED GENERATING CAPACITIES OF NOT LESS THAN 1 500 KW ARE SHOWN



DEPARTMENT OF ENERGY, MINES AND RESOURCES
INLAND WATERS BRANCH

CANADA

MAIN ELECTRIC TRANSMISSION SYSTEMS
AND
PRINCIPAL POWER GENERATING STATIONS

SCALE OF MILES

0 100 200 300 400 500 600 700 800 900 1000

0 100 200 300 400 500 600 700 800 900 1000

DECEMBER 1959



Inland Waters Branch

DEPARTMENT OF ENERGY, MINES AND RESOURCES
OTTAWA, CANADA

Commenced in 1967 and completed in 1968, the 11,200-kilowatt Lequille hydro-electric station, housed in a replica of an old French grist mill, is the Centennial project of Nova Scotia Light and Power Company.

The station stands on a site close to what is believed to be the exact location of America's first grist mill, built near Port Royal by the French baron and mill-owner, Poutrincourt, in 1607. Poutrincourt's mill has been described as the first engineering achievement in the new world. Close by, Canada's first wheat was planted and harvested.

The mill which houses the hydro plant is not an exact replica of Poutrincourt's mill, as the records left by Champlain and Lescarbot, contemporaries of Poutrincourt, fail to disclose any of the structural details. The present building is, however, an authentic replica of a typical French grist mill of the period 1550 to 1750, the "Baroque" period, in Europe. It is roofed with hand-split cedar shingles similar to those used in the early 1600's. The sides are faced with old brick of a type made in the Annapolis area in the same period.

The Lequille River, known variously throughout its chequered history as the Dauphin River, Mill River, Allain's or Allen's River, supplies water through 1,530 feet of 7' diameter penstock to drive the station's 15,000-horsepower turbine.

The few horsepower extracted by Poutrincourt's mill from the Lequille River in the early seventeenth century was used to grind grain for the small settlement of Port Royal; three hundred and sixty years later, Nova Scotia Light and Power Company's "mill" on North America's oldest working river feeds electrical energy to a transmission grid which supplies power to a flour mill on the Halifax waterfront.

énergie électrique au canada

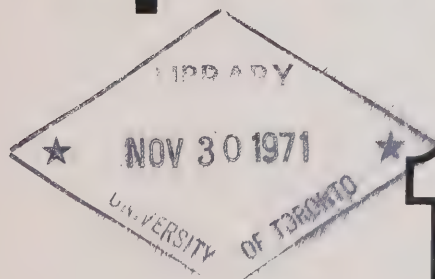
Canada
Electric
Power

CAI MT 51

S22



electric power in canada



1969

CH/AT 51
522

ELECTRIC POWER IN CANADA

DEPARTMENT OF ENERGY, MINES AND RESOURCES
ENERGY DEVELOPMENT SECTOR

1969

1969

MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES
SECTEUR DE L'EXPLOITATION DE L'ÉNERGIE

**L'ÉNERGIE
ÉLECTRIQUE
AU
CANADA**

PREFACE

"Electric Power in Canada" is compiled and published by the Energy Development Sector of the Department of Energy, Mines and Resources.

It presents an outline of the progress made during 1969 by Canada's electric utility industry in meeting the growing needs of its customers and includes an updated tabulation of power generation facilities.

Plans for future development of electrical systems in Canada are reviewed and some comments are included on the increasing problems of meeting the growing demand for electrical energy in an economical and reliable manner with increasing cost of financing and more pressing constraints of environment restrictions.

The Sector acknowledges with thanks the co-operation of electric utilities and of industrial companies with generating facilities, in providing the information on which this publication is based. Invaluable assistance has been given by the Department's Inland Waters Branch and by the Dominion Bureau of Statistics with whom close liaison is maintained in the collection of data.

PRÉFACE

Les données publiées dans «l'Énergie électrique au Canada» sont compilées par le Secteur de l'énergie du ministère de l'Énergie, des Mines et des Ressources.

Cet ouvrage présente dans ses grandes lignes le progrès accompli au cours de l'année 1969 par l'industrie des services publics d'énergie électrique au Canada pour répondre à la demande croissante des consommateurs, et fournit une liste mise à jour des centrales électriques.

Il présente également les projets d'aménagement de réseaux électriques au Canada, ainsi que quelques observations sur les problèmes croissants qui se posent pour répondre à la demande en énergie électrique, d'une manière sûre et économique compte tenu de l'augmentation du coût du financement et des contraintes plus étroites imposées par le respect du milieu naturel.

Le Secteur remercie les services d'utilité publique et les entreprises industrielles qui produisent de l'électricité, de l'avoir aidé à compiler les données qui ont servi à la rédaction de la présente publication. Il est aussi redevable à la Direction des eaux intérieures du Ministère pour son importante collaboration et au Bureau fédéral de la statistique, avec qui il demeure en contact étroit pour la compilation des données.

The map inside the back cover shows main transmission systems and electric power generating stations in Canada.

A series of maps showing similar information in greater detail is available for the following regions:

1. British Columbia, Yukon Territory and Northwest Territories
2. Alberta, Saskatchewan and Manitoba
3. Ontario
4. Québec
5. New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland

These maps are available from:

Electrical Energy Adviser
Energy Development Sector
Department of Energy, Mines &
Resources
Ottawa 4, Ont.

Photographs were provided through the courtesy of the following organizations:

British Columbia Hydro and Power Authority
Canadian Utilities Limited
Churchill Falls (Labrador) Corp. Ltd.
Hydro-Electric Power Commission of Ontario
Manitoba Hydro
Quebec Hydro-Electric Commission

La carte au verso de la dernière couverture, montre les principaux réseaux de transport d'énergie électrique et principales centrales au Canada.

Une série de cartes donnant des renseignements identiques mais plus détaillés, est disponible, pour les régions suivantes:

1. Colombie-Britannique, Territoire du Yukon et Territoires du Nord-Ouest (Anglais)
2. Alberta, Saskatchewan et Manitoba (Anglais)
3. Ontario (Anglais)
4. Québec (Français et Anglais)
5. Nouveau-Brunswick, Nouvelle-Écosse, Île du Prince-Edouard et Terre-Neuve (Anglais)

Ces cartes peuvent être obtenues du:

Conseiller en énergie électrique
Secteur de l'exploitation de l'énergie,
Ministère de l'Energie, des Mines et
des Ressources,
Ottawa 4, Ontario.

Les photographies ont été gracieusement fournies par les organismes énumérés ci-dessous:

Canadian Utilities Limited
Churchill Falls (Labrador) Corp. Ltd.
Commission de l'énergie électrique de l'Ontario
Commission d'électricité du Manitoba
Commission hydroélectrique de Québec
L'Administration des eaux et de l'électricité
de la Colombie Britannique

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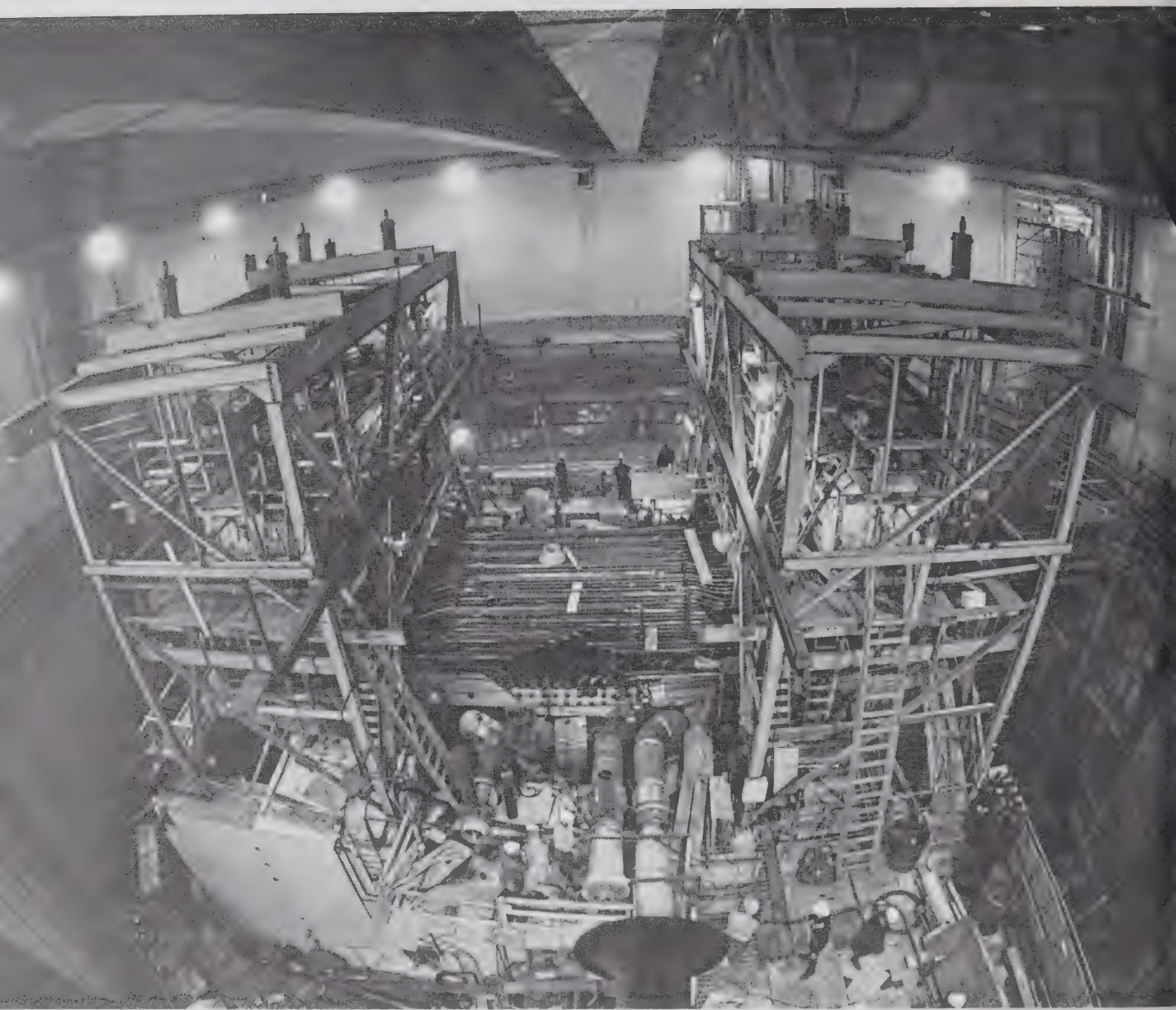
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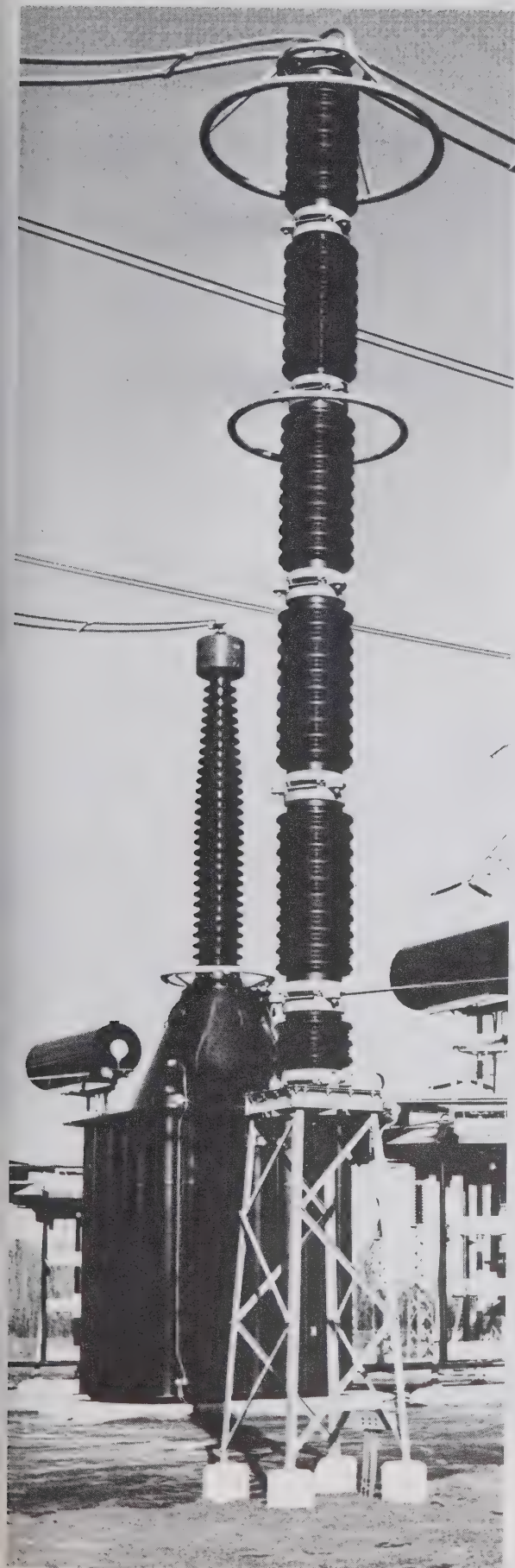


Interior view of reactor construction at
Hydro Quebec's Gentilly nuclear station.

Vue intérieure de la construction d'un réacteur
centrale nucléaire de Gentilly, de l'hydro-Québec

DEVELOPMENT OF ELECTRIC POWER IN CANADA

EXPANSION DES INSTALLATIONS ÉLECTRIQUES AU CANADA



Helicopter-assist
tower line construction
B.C. Hydro on Saltspring Island

Construction d'un pylône électrique
à l'aide d'hélicoptère, sur l'île Saltspring
pour la British Columbia Hydro



Historical Summary

Previous issues of this publication have provided a review of the historical development of electric power generation in Canada. The installed capacity of the industry has grown nearly 40 times since 1915 corresponding to an average annual growth rate of over 6%. Originally the generation resources of Canada were predominantly powered by water and as recently as 1950 hydro-electric capacity provided over 90% of the total installed capacity. By the end of 1969 this percentage was 68% and thermal generation capacity has grown over the last 15 years at an average annual rate of nearly 14%.

The industry has also expanded from meeting the needs of local areas or small regions to large systems with extensive transmission systems within provincial boundaries and, where appropriate, by the provision of interconnections between provinces and across the international boundary with the United States.

Bref historique

Dans de précédentes éditions de cet ouvrage, un aperçu historique de la mise en valeur des sources d'énergie électrique au Canada a été présenté. La puissance installée a augmenté de près de 40 fois depuis 1915, ce qui correspond à un taux d'accroissement annuel moyen de plus de 6 p. 100. À l'origine, la production d'énergie électrique au Canada reposait essentiellement sur les ressources hydrauliques, et en 1950 encore la production hydro-électrique représentait plus de 90 p. 100 de la puissance installée. Vers la fin de 1969, cette proportion était de 68 p. 100; la puissance thermique a augmenté au cours des 15 dernières années à un taux annuel moyen de près de 14 p. 100.

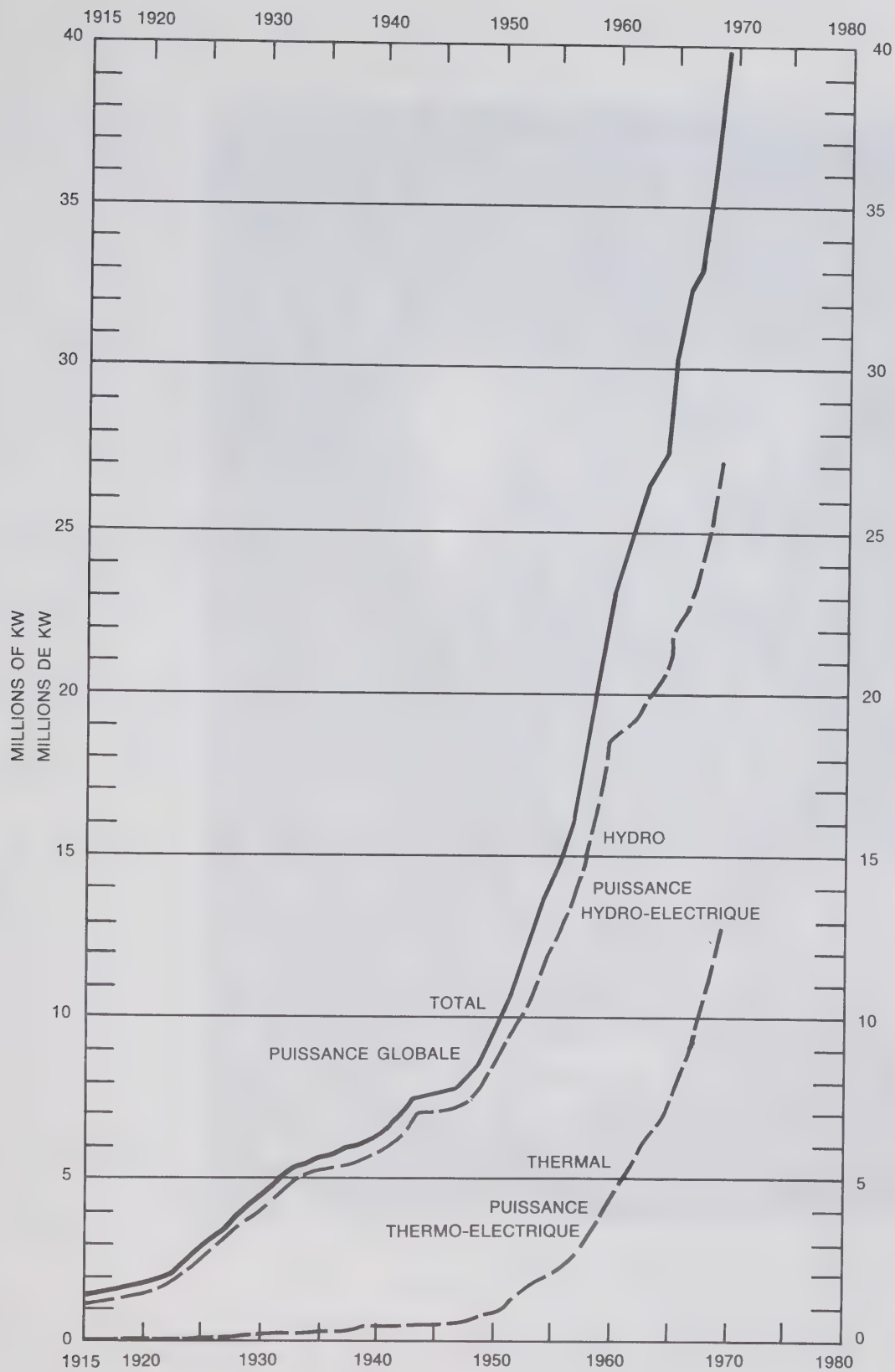
Cette industrie a progressé également sur le plan géographique; des petites régions qu'elle desservait, elle possède maintenant de vastes réseaux de transport à l'intérieur de chaque province, qui sont interconnectés, lorsque c'est utile, à ceux des autres provinces et à ceux des États-Unis.

TABLE 1
Installed Capacity – Megawatts (MW) – Dec. 31, 1969

Province or Territory	Hydro	Thermal	Total
British Columbia	3,956	1,464	5,420
Yukon	26	17	43
Northwest Territories	35	31	66
Alberta	616	1,593	2,209
Saskatchewan	584	841	1,425
Manitoba	1,218	504	1,722
Ontario	6,634	5,880	12,514
Quebec	12,499	764	13,263
New Brunswick	563	652	1,215
Nova Scotia	163	773	936
Prince Edward Island	—	77	77
Newfoundland	820	128	948
Total	27,114	12,724	39,838
Addition 1969 MW	2,132	1,708	3,840
Increase over 1968 %	8.5	15.50	10.7

TABLEAU I
Puissance installée – Mégawatts (MW) – 31 décembre 1969

Province ou territoire	Puissance hydraulique	Puissance thermique	Total
Colombie-Britannique	3,956	1,464	5,420
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Augmentation en 1969 en mégawatts	2,132	1,708	3,840
Augmentation par rapport à 1968 en %	8.5	15.50	10.7



Growth of electric power generating capacity in Canada.

Accroissement de la production d'énergie électrique au Canada.



Rock excavation is complete for the Churchill Falls underground powerhouse.

Les travaux de creusement dans la roche pour la centrale électrique souterraine de Churchill Falls sont achevés.

Available Energy Resources

Power generated from falling water is a renewable resource based on natural precipitation and ultimately on the power of the sun. The energy may be extracted from river flows (run of the river) or these flows may be stored for periods in headponds or reservoirs and released through turbines at times to suit the demand for power. The available power depends on the amount of precipitation in the watershed area and this varies from year to year with variation in rainfall. It also depends on available head drop which can be developed economically, which in turn is a function of local topography. Most of the hydro-electric sites close to the larger centres of population and load have already been developed. Significant amounts of undeveloped water power exist, for example, in British Columbia, Quebec and Manitoba but most would require considerable additional investment for transmission in addition to the relatively high investment in the hydro development itself.

A study on utilizing the potential of tidal power in the Bay of Fundy was nearing completion at the end of 1969. This is also a renewable source of energy but suffers from the problem of matching the timing of tidal movements to the timing of demand for electrical power.

Electrical energy may also be generated from fuel fired steam plants utilizing the combustion of fossil fuels (coal, oil, gas) or from heat generated by controlled nuclear fission of uranium (or other fissile materials). Such plants are not tied as closely to geographical locations as hydro-electric generation but they do require a convenient source of fuel at reasonable cost and supplies of cooling water for steam condensers. Fossil fueled plants, in addition to discharging heat to cooling water also discharge combustion products to the atmosphere and both factors may place significant restrictions on the choice of sites. Transportation costs may also influence the choice of fuel amongst alternatives. All thermal plants including nuclear plants utilize fuel resources which, once used, cannot be replaced although, in terms of current consumption, reserves of some of the fuels are very large.

Environment

Increasing public concern is being expressed for the changes which an industrial society imposes on the environment. All of the available choices of electrical power generation impose some non-reversible disturbance of the environment. Hydro-electric generation involves

Ressources énergétiques disponibles

L'électricité produite par les chutes d'eau constitue une ressource renouvelable fondée sur les précipitations naturelles et en fin de compte sur la puissance du soleil. L'énergie peut être produite par le débit des rivières (écoulement de la rivière), ou l'on peut retenir les eaux dans des réservoirs ou des retenues pendant un certain temps et les déverser sur les turbines au moment où la demande se fait sentir. La quantité d'électricité disponible dépend de la précipitation dans le bassin hydrographique, ce qui varie chaque année selon les chutes de pluie. Elle dépend également des hauteurs de chute qui peuvent être aménagées avantageusement et, qui elles-mêmes dépendent de la topographie locale. La majorité des emplacements propres à la production d'hydro-électricité et situés près des grands centres de consommation ont déjà été aménagés. D'importantes ressources hydrauliques n'ont pas encore été aménagées en Colombie-Britannique, au Québec et au Manitoba, mais dans la plupart de ces cas il faudrait trouver des investissements supplémentaires considérables pour les installations de transport, en plus de ceux déjà élevés que représente l'installation hydro-électrique elle-même.

A la fin de 1969 une étude sur l'utilisation possible des marées de la baie de Fundy était presque achevée. Il s'agit également d'une source d'énergie renouvelable, mais elle pose le problème de la correspondance horaire entre les mouvements de la marée et la demande de pointe en électricité.

L'énergie électrique peut également être produite dans des centrales thermiques à combustibles fossiles (charbon, pétrole, gaz) ou utilisant la chaleur produite par la fission nucléaire contrôlée de l'uranium (ou d'une autre matière fissile). Ces types de centrales ne dépendent pas aussi étroitement de leur situation géographique que les centrales hydrauliques, mais elles nécessitent une source convenable de combustible et à un prix raisonnable, ainsi que de grandes quantités d'eau pour le refroidissement des condensateurs de vapeur. Les centrales fonctionnant aux combustibles fossiles, outre qu'elles communiquent de la chaleur à l'eau de refroidissement, déversent également des produits de combustion dans l'atmosphère, ce qui peut amener une certaine limitation dans le choix des lieux d'implantation. Le prix de revient du transport peut également jouer un rôle déterminant dans le choix du combustible approprié. Toutes les centrales thermiques, y compris les centrales nucléaires, utilisent des combustibles

flooding to create storage, impedes the migration of anadromous fish and may lead to reduction in the oxygen content of downstream water flow. Thermal generation requires the rejection of heat energy from the thermal cycle to a heat "sink" such as a stream or lake, or to the atmosphere through cooling towers. Fossil fueled thermal plants discharge particulates and several oxide gases to the atmosphere and nuclear fueled plants must be designed with great care to limit the release of gaseous and liquid radioactive leakage to very low, safe levels.

While most of these effects are not new disturbers of our natural environment, the increasing scale on which generation expansion must take place and the use of larger units for generation increase the difficulty of avoiding excessive interference with the environment. Furthermore, other contributions to pollution such as automobile exhaust have also increased rapidly in the more densely populated areas so that the total problem is growing and is matched by an increasing public concern for preserving or improving the natural setting.

The electric utility industry must take every possible action to limit its contribution to the pollution of our environment. It must explain, with increasing effectiveness, the alternatives open to it to meet the energy demands of the community, the benefits which will flow from the continued provision of an adequate supply of electrical energy and the justification for the minimal demands which meeting these needs will place on the environment.

Reliability

Electrical system designers must continue their efforts to achieve price stability in the face of increasing cost of equipment, fuel and operation. Progress in this area has been made by building generating stations of increasing size, located on the most favourable sites and by interconnecting with neighbouring systems to maximize the utilization of equipment within several adjoining regions. This has resulted in the growth of large and relatively complex transmission systems and, generally speaking, has resulted in improvement in the security of power supply since shortage of generating plants due to unexpectedly high loads or to failure of generating equipment can be compensated for by other generating plants within the system or from neighbouring systems within a power pool.

qui, une fois consommés, ne peuvent être remplacés; cependant, par rapport à la consommation courante, les réserves disponibles de certains de ces combustibles sont énormes.

Le milieu naturel

Le public s'inquiète de plus en plus des modifications qu'une société industrielle apporte au milieu naturel. Toutes les possibilités actuelles de production d'électricité imposent des transformations irréversibles au milieu. La production d'énergie hydraulique entraîne l'inondation de certains lieux pour la création des réservoirs, entrave la migration des poissons anadromes et peut en aval provoquer une réduction de la teneur en oxygène des eaux. La production d'énergie thermique entraîne le déversement de l'énergie calorifique dégagée par le cycle thermique dans un «récepteur» de chaleur, soit une rivière ou un lac, ou dans l'atmosphère par l'intermédiaire de cheminées de refroidissement. Les centrales thermiques à combustible fossile déversent des poussières et divers oxydes gazeux dans l'atmosphère; les centrales nucléaires doivent être étudiées avec beaucoup de prudence pour limiter l'émission de gaz et les fuites de liquides radioactifs à des niveaux minimes et sans danger.

Bien que ces effets, pour la plupart, ne soient pas nouveaux dans notre milieu, le rythme nécessaire d'expansion de la production d'électricité, et la construction d'installations beaucoup plus grandes, rendent beaucoup plus difficile la tâche d'éviter les dommages excessifs au milieu naturel. De plus, d'autres causes de pollution, comme les gaz d'échappement des automobiles, ont aussi rapidement pris de l'expansion dans les zones les plus peuplées ce qui fait que l'ensemble du problème s'accroît et que le public se préoccupe de plus en plus sérieusement de préserver ou d'améliorer le cadre naturel qui l'entoure.

Les services publics de production d'électricité doivent tout entreprendre pour limiter leur participation à la pollution de notre milieu. Ils doivent exposer avec une efficacité accrue, les choix qui s'offrent à eux pour répondre aux besoins énergétiques d'une localité; les avantages qui découleront de la production soutenue d'une quantité appropriée d'électricité, et justifier les dommages minimums au milieu qu'exige la satisfaction de ces besoins.

Increased utilization of electrical energy has at the same time made individual users more dependent on the utility systems for essential functions such as heating, cooling, elevator systems and emergency services of various types. While it is not in the best economic interests of electric power users in general to attempt to meet the needs of extremely power-critical functions, nevertheless a very high level of reliability is important. The interconnected system is the best form of security but increasing attention must be given to ensuring that in the very unlikely event of regional failure, the equipment and operating practices permit the restoration of power supply to customers with minimum delay.

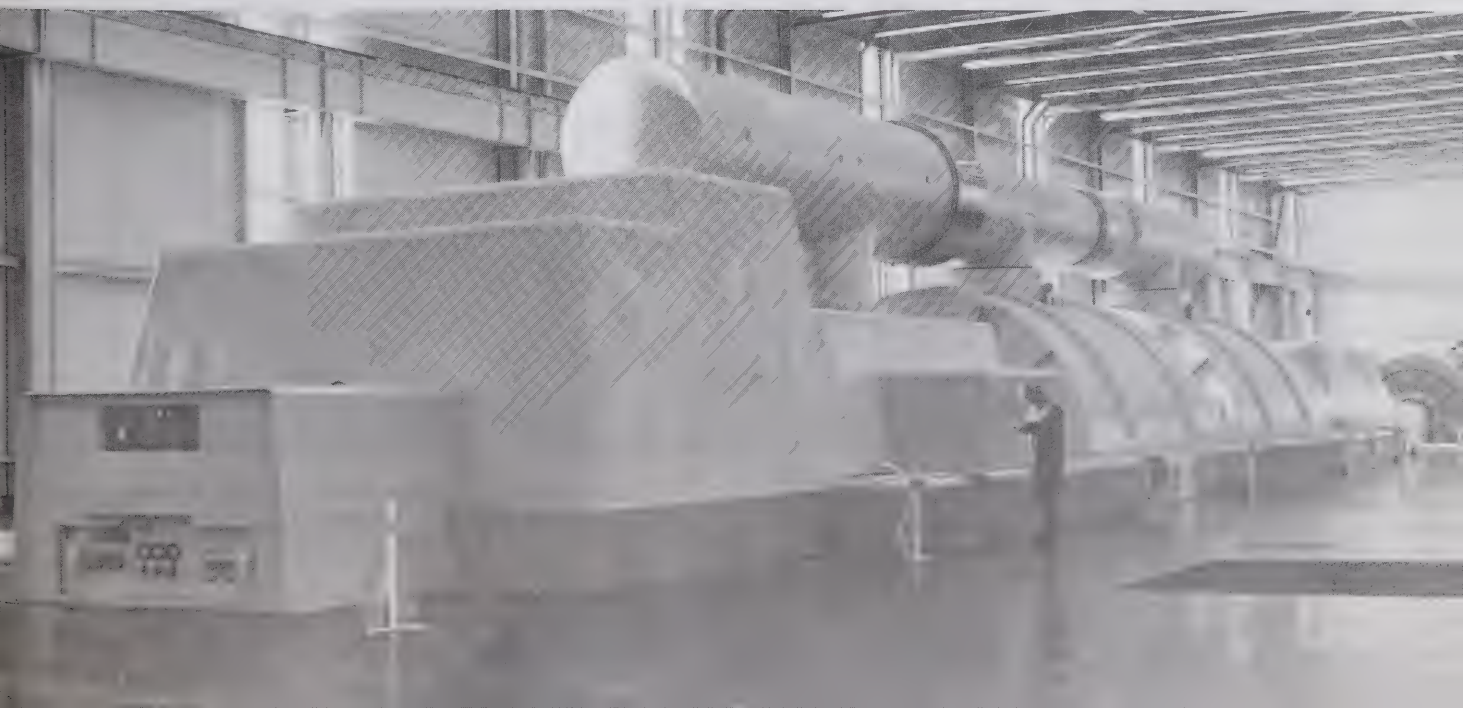
Sûreté du fonctionnement

Les concepteurs de réseaux électriques doivent poursuivre leurs efforts pour stabiliser les prix, face à l'augmentation du coût du matériel, du combustible et du fonctionnement. La construction de centrales plus grandes aux emplacements les plus favorables, et l'interconnexion avec des réseaux voisins, afin d'utiliser à plein rendement les installations de régions adjacentes ont permis de progresser dans ce domaine. Le résultat de ces progrès a été la constitution de réseaux de transport étendus et relativement complexes, et plus généralement, l'amélioration de la sûreté de l'approvisionnement en électricité, car lorsqu'il y a pénurie en raison de charges brusquement accrues ou d'une panne des installations, cette insuffisance peut être compensée grâce aux autres centrales du réseau ou en faisant appel à des réseaux voisins interconnectés.

L'utilisation accrue de l'énergie électrique a rendu l'abonné beaucoup plus dépendant des services d'utilité publique en ce qui concerne des fonctions essentielles comme le chauffage, le refroidissement, les ascenseurs et les dispositifs de secours de diverses sortes. Bien qu'il ne soit pas au meilleur avantage économique des consommateurs d'énergie électrique d'essayer de répondre à une demande maximum extrême, il est néanmoins important d'atteindre à un très haut niveau de sûreté. Du point de vue de la sûreté, le réseau interconnecté présente la meilleure solution, mais il convient de s'assurer soigneusement qu'en cas de panne régionale, bien que cette éventualité soit peu probable, les moyens nécessaires seront disponibles pour remettre le service en fonctionnement dans un délai minimum.

Two 500-MW thermal units were put in operation by Ontario Hydro at Lambton in 1969.

Deux groupes thermiques de 500 MW ont été mis en service par l'Hydro-Ontario à Lambton en 1969.



Interconnections

One of the justifications for interconnections between the neighbouring power systems has been mentioned in relation to reliability. Additional advantages lie in the opportunities to install and use larger generating facilities, to optimize construction schedules and to operate the least expensive generation available to meet system loads. Frequently the characteristics of interconnected systems will be complementary. Seasonal or daily load peaks may be non-coincident permitting less total generation than would be needed for each system separately. One system may possess more favourable conditions for base load generation, another may have convenient locations for peaking plants.

The attractiveness of interconnections will, however, depend on system size, the transmission distances

Interconnexions

L'une des raisons justifiant l'interconnexion entre des réseaux voisins a été mentionnée au sujet de la sûreté de fonctionnement. Les autres avantages sont la possibilité d'installer et d'utiliser de plus grandes centrales, de permettre une plus grande efficacité dans le rythme de la construction, et de produire l'électricité le meilleur marché possible pour répondre à la demande du réseau. Très souvent, les avantages de chaque réseau interconnecté sont complémentaires. Les demandes de pointes quotidiennes ou saisonnières par exemple peuvent se produire à des heures différentes, ce qui permet de produire moins qu'il ne le faudrait si chaque réseau fonctionnait séparément. Un réseau peut présenter des conditions plus avantageuses pour produire l'énergie nécessaire à la charge de base, un autre peut avoir des centrales mieux placées pour répondre à la demande de pointe.



Submarine cable being laid in 1969 for
B.C. Hydro's D.C. intertie to Vancouver Island.

Pose d'un câble sous-marin, en 1969, reliant le réseau de courant
continu de la British Columbia Hydro à l'île Vancouver.

involved and the degree to which the system capabilities and demands complement one another. In a joint federal-provincial study on transmission, it was concluded that conditions in Canada do not yet make a completely connected and integrated electrical power system attractive. On the other hand, inter-regional ties have been and are being developed as economic and technical factors permit. These developing interconnections include ties across the international boundary with the United States where there is mutual advantage to the Canadian and U.S. systems.

Objectives

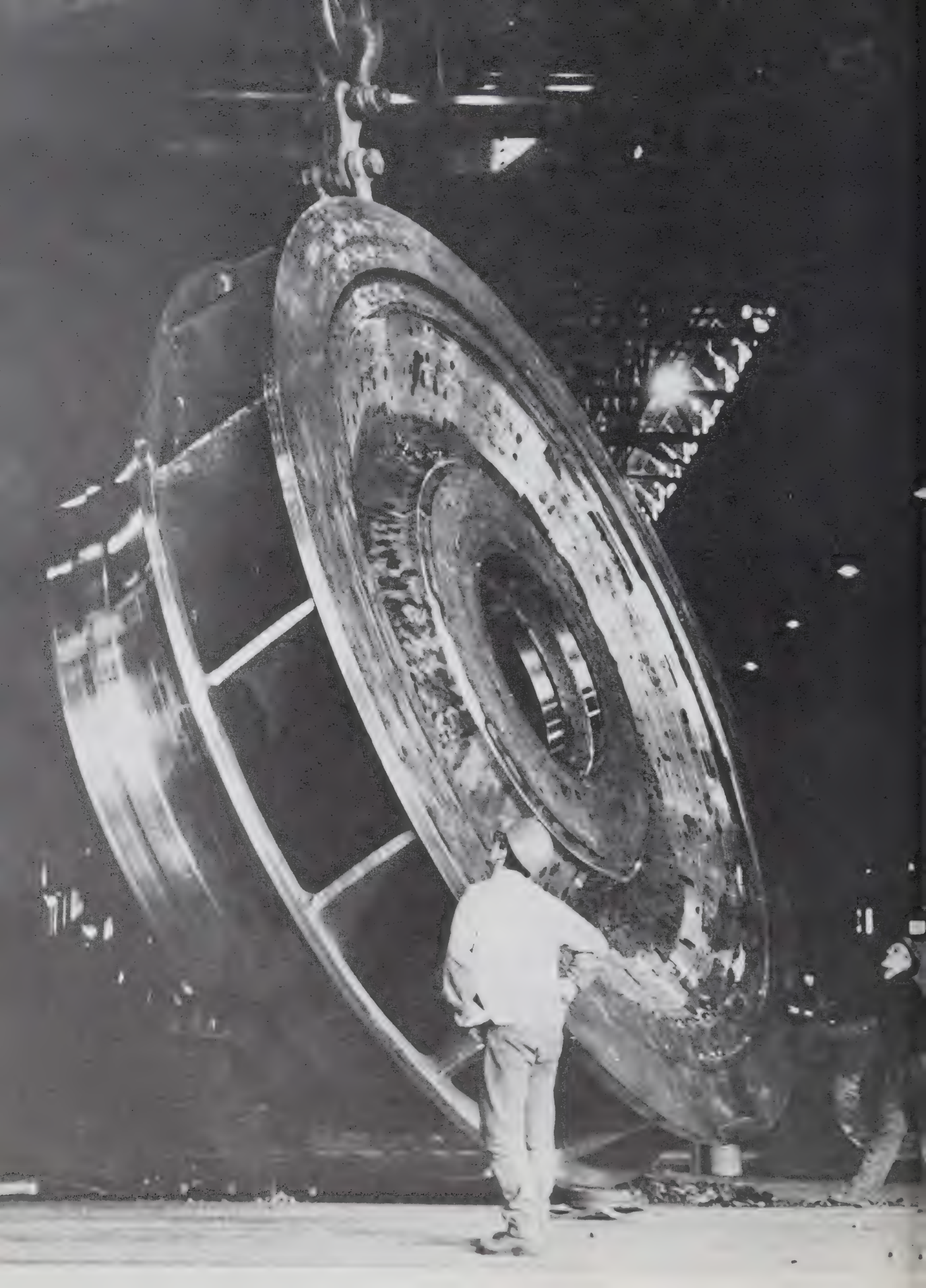
The objectives of electric power utilities may be considered as achieving an optimum balance between a variety of sometimes conflicting technical, economic and social considerations. This does not necessarily mean a narrow adherence to providing power at minimum cost but, because of the very capital intensive nature of the industry's growth needs, the economic factors are of great significance. Revenues must provide for the servicing of debt obligations, interest and retirement, and with appropriate additions to the equity of the enterprise so that funds will be available on favourable terms for future growth. In achieving these objectives the utility must make a careful selection between alternative types of generation, hydro or thermal, fossil or nuclear, base load or peak load, remote from or close to the load centre, all as seems best fitted to meet its objective of supplying customer needs reliably and at reasonable cost. The minimizing of financial demands on its customers must be balanced with minimizing the physical demands on the environment which the power development shares with other users of the same environment. This balance will be achieved only if a continuing dialogue develops with the utility taking a leading responsibility to develop an informed public. A further responsibility is to recognize opportunities for technological advances and to encourage research and development designed to provide better solutions to the conflicting demands.

An important element of the necessary dialogue between the elements of society involved in expansion choices and their effects is to ensure that prolonged delays in committing expansion plans do not result from misunderstanding or mistrust with resulting risk of failure to meet society's growing need for electrical energy.

Néanmoins, l'intérêt des interconnexions dépendra de la taille des réseaux, des distances de transport, et de la mesure dans laquelle les productions et les demandes sur chaque réseau se complètent. Dans une étude conjointe-fédérale-provinciale sur le transport, on est arrivé à la conclusion que les conditions actuelles au Canada ne rendaient pas encore très avantageux un réseau électrique entièrement connecté et intégré. Par contre les liaisons entre les régions existent et se font chaque fois que les conditions économiques et techniques le permettent. Parmi ces nouvelles interconnexions on compte des liaisons au-delà de la frontière internationale avec les États-Unis, qui présentent des avantages réciproques pour les réseaux canadiens et américains.

Objectifs

Les objectifs que poursuivent les services publics d'énergie électrique visent à réaliser un équilibre idéal entre un certain nombre de facteurs techniques, économiques et sociaux, parfois en opposition les uns aux autres. Il ne s'agit pas obligatoirement de chercher uniquement à produire de l'électricité le moins cher possible, mais étant donnée l'importance des capitaux nécessités par l'expansion de cette industrie, les facteurs économiques sont loin d'être négligeables. Les bénéfices doivent permettre le remboursement des emprunts, des intérêts et des obligations, et le financement à des conditions favorables de l'expansion future, par l'augmentation du capital de l'entreprise. Le service public doit effectuer un choix judicieux, pour réaliser ces objectifs, entre les différents types de production, hydraulique ou thermique, à combustible fossile ou nucléaire, pour la demande de pointe ou de base, éloignée ou proche du lieu de la demande, selon les conditions et afin de répondre le mieux possible aux besoins des consommateurs, c'est-à-dire efficacement et à un prix raisonnable. La réduction du fardeau financier imposé à ses abonnés doit être contrebalancée par une réduction des atteintes au milieu dans lequel le service est installé au même titre que les autres utilisateurs de ce milieu. Cet équilibre n'est possible que si le service responsable engage un dialogue continu avec le public afin de l'informer. L'entreprise doit également mettre à profit les occasions de réaliser des progrès techniques, et encourager la recherche et le développement de procédés qui apporteront les meilleures solutions à des exigences contradictoires.



Utilization

After deducting about 8% for losses, Canada's electric power generation is divided amongst commercial users (11%), domestic and farm consumption (21%) with the remaining 60% used for industrial loads. This latter group can be allocated one third to the pulp and paper industry, one third to the mineral industry and the remaining third to all other industry categories. The availability of electrical power to this large industrial load, at reasonable cost, is an important element in Canada's opportunity for industrial growth.

For a few industries the cost of electric power is a very key element in economic competitiveness. For most industries however electric power is but one of many cost elements which influence the opportunities for expansion. The assurance of a reliable supply of electrical power, the availability of assured supplies to meet the needs of growing demand without delay, and attention to the many other factors influencing industrial development will normally be a more effective recipe for industrial growth than one which assumes that "low cost power" is an essential or sole ingredient for success.

Part of Canada's growing needs for electric power reflects a growth in population but in addition, power consumption per capita increased in 1969 by 3% to 8,893 kilowatt-hours (kwh). Electrical energy generated during the year was equivalent to 54.5 % of the continuous capacity of all generating units installed at year end. The balance of continuous capacity reflects fluctuations in load below peak demand during daily and seasonal cycles together with reserves of generation.

The largest stainless steel casting ever made:
a runner for one of the Churchill Falls machines.

La plus grande pièce en acier inoxydable jamais coulée:
il s'agit de la roue pour l'une des turbines
de la centrale de Churchill Falls.

Il est important, dans les dialogues engagés entre les éléments de la société concernés par le choix des méthodes d'expansion et par leurs répercussions, d'éviter tout retard prolongé dans les programmes d'expansion à la suite de malentendu ou de méfiance, en raison du risque que représenterait une insuffisance de la production face à la demande croissante.

Utilisation de l'énergie électrique

Déduction faite de près de 8 p. 100 de pertes, la production d'énergie électrique du Canada est répartie comme suit: usages commerciaux (11 p. 100), consommation domestique et agricole (21 p. 100) et consommation industrielle (60 p. 100). Dans ce dernier groupe, peut compter un tiers pour l'industrie des pâtes et papiers, un tiers pour l'industrie minérale et le reste pour tous les autres types d'industries. La production d'énergie électrique, à prix raisonnable, pour cette demande considérable représente un élément important dans les perspectives canadiennes de croissance industrielle.

Pour un petit nombre d'industries, le prix de l'électricité est un élément majeur dans la concurrence économique. Cependant, pour la plupart des industries le prix de l'électricité n'est qu'un facteur parmi tant d'autres du prix de revient, ayant une influence sur les perspectives d'expansion. L'assurance de pouvoir compter sur un bon approvisionnement en électricité, la disponibilité de quantités sûres permettant de répondre immédiatement à une demande croissante, et la réponse à de nombreux autres problèmes importants pour le développement industriel, seront certainement des éléments beaucoup plus efficaces de l'expansion industrielle que celui qui présume qu'un «faible prix pour l'électricité» est le facteur essentiel ou unique du succès industriel.

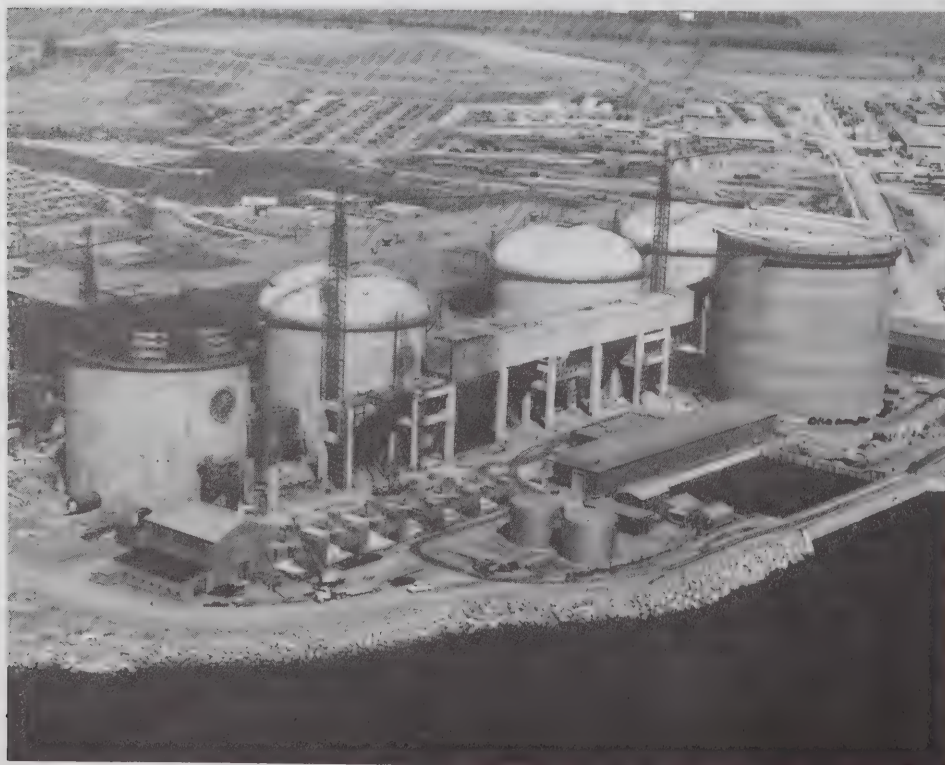
L'accroissement de la consommation en électricité au Canada est dû en partie à l'accroissement de la population, mais également à l'accroissement de la consommation par personne qui a été en 1969 de 3 p. 100, passant à 8,893 kilowatts-heures (kWh). La quantité d'énergie électrique produite au cours de cette année représente 54.5 p. 100 de la capacité de production continue de toutes les centrales en fonctionnement à la fin de l'année. La différence entre la quantité produite et la quantité potentielle représente les fluctuations de la demande inférieure à la demande de pointe au cours des cycles quotidiens et saisonniers, y compris les réserves de production.

Industry Structure

The electric utility industry operates under provincial jurisdiction and in most provinces the generation and main transmission is the responsibility of a provincial crown corporation. Investor owned electric utilities contribute about 10% of total power generated and are predominant in Alberta and play a significant role in Nova Scotia, Newfoundland and Labrador, Prince Edward Island, Ontario and British Columbia. Generating facilities in industrial establishments represented 13.2% of installed capacity at the end of 1969 and generated 17.6% of the electrical energy produced during the year. There is an annual decline in industrial generation as it becomes increasingly attractive to purchase power from utilities who can take fuller advantage of larger unit sizes and operational flexibility. Even when process steam is required for an industrial process, there are some instances when it is attractive to purchase both steam and power from the electric utility; supply of steam to the Point Tupper heavy water plant from the Nova Scotia Power Commission Point Tupper Thermal Station commissioned in 1969 is an example.

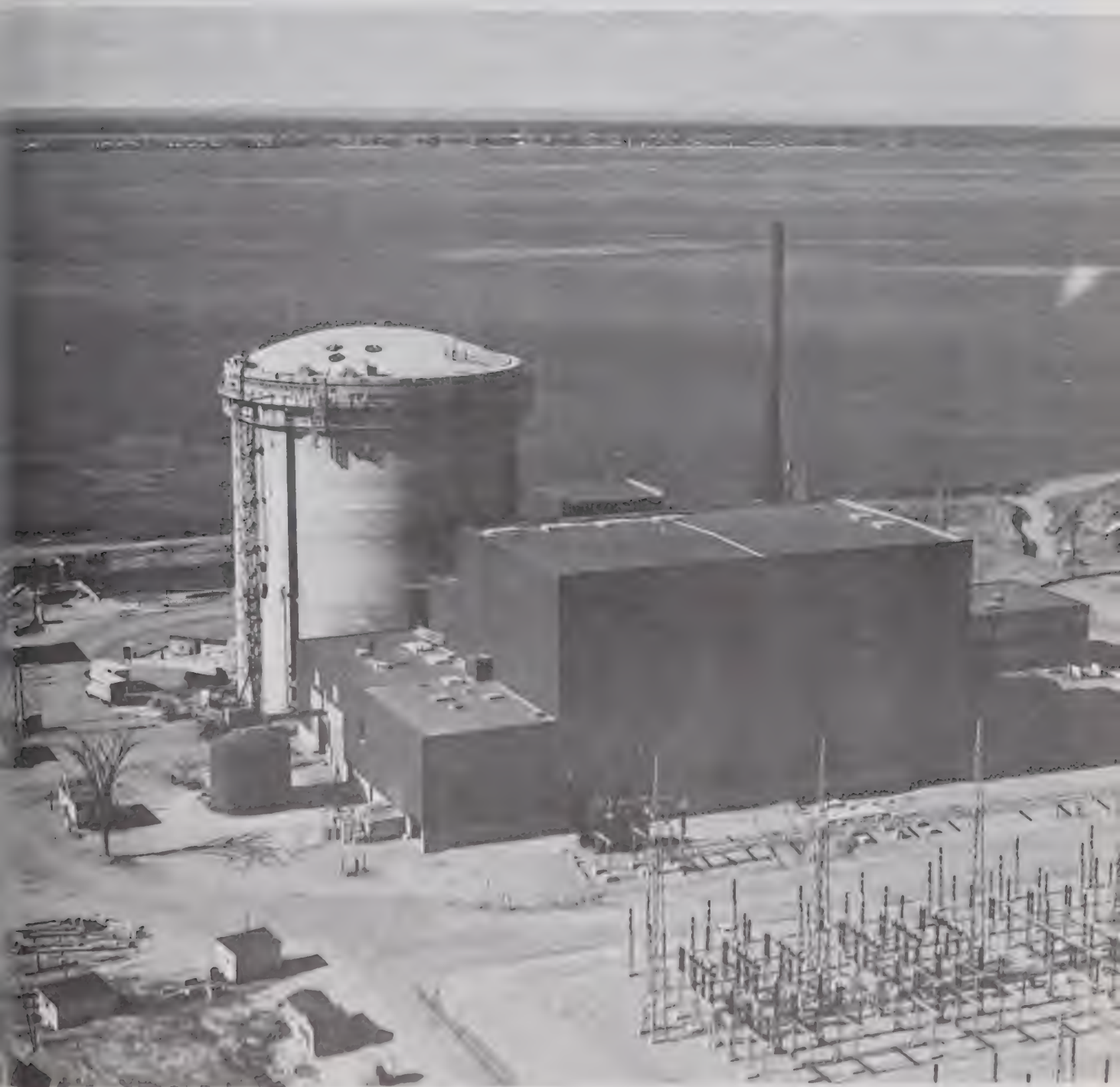
Structure de l'industrie

Les services publics de production d'électricité relèvent de la juridiction provinciale, et dans la plupart des provinces la production et le transport principal de l'électricité relèvent de la compétence d'une société provinciale de la Couronne. Les services privés d'électricité produisent environ 10 p. 100 de la production totale, et sont nombreux en Alberta; ils sont également assez nombreux en Nouvelle-Écosse, à Terre-Neuve et au Labrador, dans l'Île-du-Prince-Édouard, en Ontario et en Colombie-Britannique. Les installations électrogènes des entreprises industrielles pouvaient fournir 13.2 p. 100 de la production potentielle à la fin de 1969, et ont fourni effectivement 17.6 p. 100 de l'électricité produite au cours de cette année. On remarque un déclin annuel de la production de ce type d'électricité, car il devient beaucoup plus avantageux d'acheter l'électricité des services qui peuvent tirer avantage de centrales plus grandes et d'une meilleure souplesse de fonctionnement. Même lorsqu'une usine a besoin de vapeur pour une opération industrielle quelconque, il est plus intéressant pour elle, dans certains cas, d'acheter à la fois l'électricité et la vapeur à une centrale; la vente de vapeur par la Nova Scotia Power Commission, Point Tupper Thermal Station, à l'usine d'eau lourde de Point Tupper entrée en service en 1969 en est un exemple.



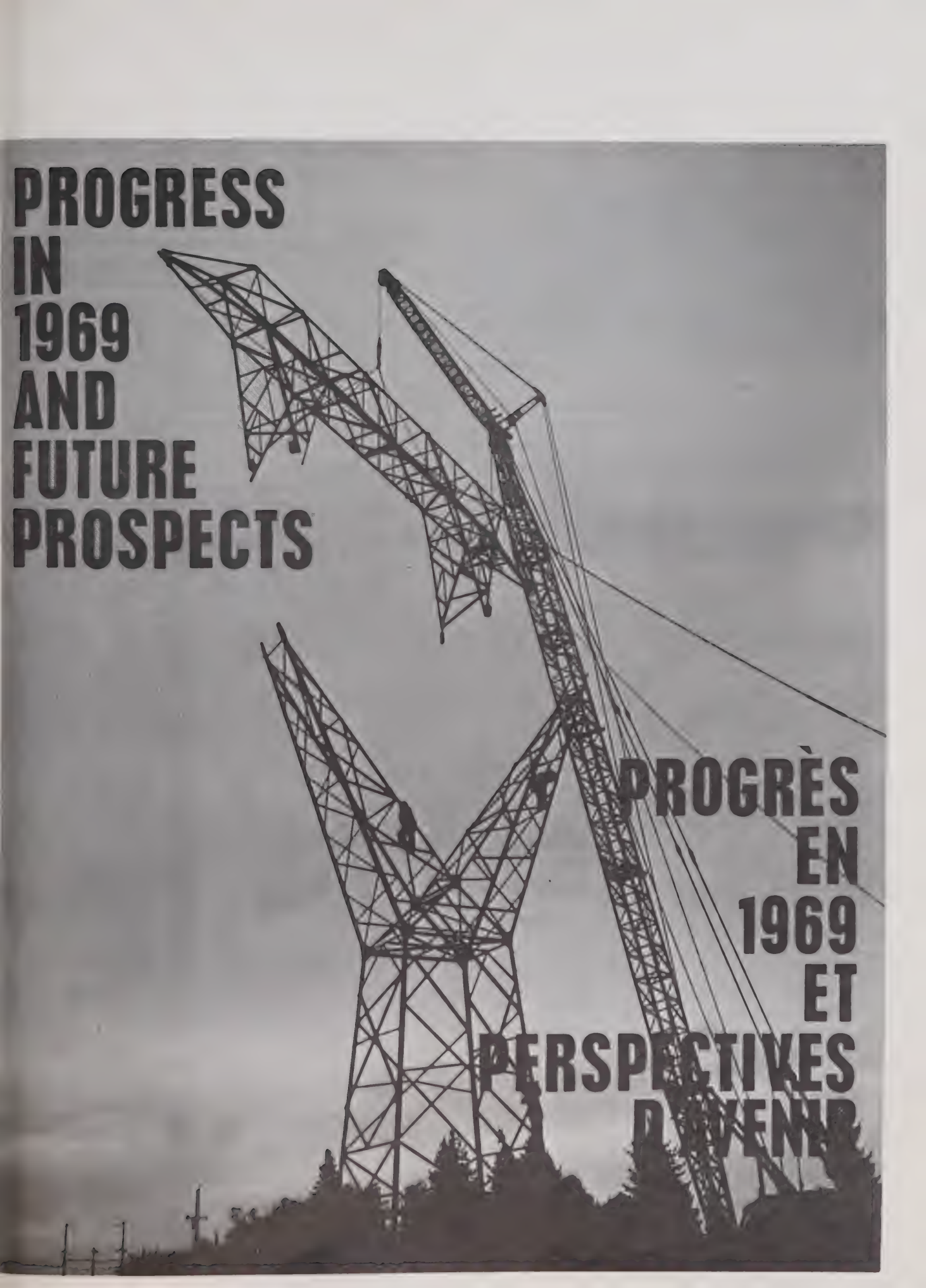
The first nuclear unit at Ontario Hydro's Pickering plant is scheduled for 1971.

L'achèvement du premier groupe de la centrale nucléaire de Pickering, de l'Hydro-Ontario, est prévu pour 1971.



Quebec's 250-MW Gentilly nuclear plant will be commissioned in 1971.

La centrale nucléaire de Gentilly de 250 MW, de l'Hydro-Québec, sera mise en service en 1971.



**PROGRESS
IN
1969
AND
FUTURE
PROSPECTS**

**PROGRÈS
EN
1969
ET
PERSPECTIVES
D'AVENIR**

Progress in 1969

Additions to electrical generating capacity in 1969 of 3,840 MW raised the total installed capacity by 10.8% to 39,838 MW. Hydro-electric capacity accounted for 55% (2,132 MW) of the additions, with thermal generation providing the balance (1,708 MW). At December 31, 1969 total installed capacity was 68% hydro-electric, 32% thermal.

The trend to larger unit sizes is indicated from the fact that units of 150 MW or greater accounted for 85% of hydro-electric capacity increase and 83% of the thermal electric plant additions.

1969 was a record year for generation addition exceeding by 30% the 1968 record figure of 2,968 MW.

Electrical energy generated in Canada in 1969 increased by 8.6% to 190,419 GWh (million kilowatt-hours) and total primary and secondary energy supplied grew by 7.7% to 189,054 GWh. The larger growth in generation resulted from a change in the energy balance with the United States from a net import of 475 GWh in 1968 to a net export of 1,364 GWh in 1969. The 7.7% increase in available energy compares with a 6.67% average growth of the last eleven years and is also higher than last year's 6.5% increase. The 1969 generation from hydro-electric units increased by 10% compared with a 4.2% increase in thermal generation. Hydro accounted for 77.8% of total energy generated.

TABLE 2
Growth Pattern

	Hydro Production hydraulique	Thermal Production thermique	Total	
Additions 1969	2,132	1,708	3,840	Augmentation en 1969
Total 1969	27,114	12,724	39,838	Production totale en 1969
Planned 1970	886	1,359	2,245	Augmentation prévue en 1970
Est. Total 1970	28,000	14,083	42,083	Production totale estimative pour 1970
Planned after 1970	9,945	13,142	23,087	Augmentation prévue au-delà de 1970
Total with planned additions	37,945	27,225	65,170	Production totale avec les augmentations prévues

Progrès accomplis en 1969

La puissance génératrice, en 1969, a augmenté de 3,840 MW (soit 10.8 p. 100) portant la puissance totale installée à 39,838 MW. La puissance hydro-électrique s'est partagée 55 p. 100 (soit 2,132 MW) de cette nouvelle puissance, et la puissance thermique, le reste soit 1,708 MW. Au 31 décembre 1969, la puissance totale installée était à 68 p. 100 hydro-électrique et à 32 p. 100 thermique.

La tendance à accroître la dimension des centrales est indiquée par le fait que les centrales de plus de 150 MW représentent 85 p. 100 des centrales hydro-électriques nouvelles et 83 p. 100 des centrales thermiques nouvelles.

L'année 1969 a été remarquable dans le domaine de l'augmentation de la puissance qui a dépassé de 30 p. 100 celle de 1968, qui était déjà un record avec 2,968 MW.

La production d'énergie électrique au Canada en 1969 a augmenté de 8.6 p. 100 et a atteint 190,419 GWh (millions de kilowatts-heures) et la quantité totale d'énergie primaire et secondaire fournie a augmenté de 7.7 p. 100 (189,054 GWh). La plus grande partie de l'augmentation de la production provient d'une modification des échanges avec les États-Unis: on est passé d'une importation nette de 475 GWh en 1968 à une exportation nette de 1,364 GWh en 1969. L'augmentation de la production d'énergie disponible de 7.7 p. 100, est

TABLEAU II
Accroissement de la production

Plans for Future Expansion

Capacity additions planned for 1970 will be only about 59% of the 1969 record with an expected addition of 2,256 MW, of which 61% will be thermal. Such variations in year to year additions are not uncommon and reflect timing of construction progress rather than any general reduction in expansion plans. Total committed generation expansion beyond 1970, which includes units for service up to 1978, will add 23,087 MW to Canada's generating capacity. This represents an increase of approximately 58% over the expected installed capacity at the end of 1970. Actual additions likely will exceed this total since not all of the additions to 1978 have been firmly committed. Of the announced additions, including the 1970 plans, thermal units will provide about 57%, and thermal generation, on completion of these projected plans, will have grown from 32% to 42% of total installed capacity.

supérieure à l'augmentation moyenne de 6.67 p. 100 enregistrée au cours des onze dernières années et également à l'augmentation de 6.5 p. 100 de l'année précédente. La production, pour 1969, d'énergie hydraulique a augmenté de 10 p. 100 et la production thermique de 4.2 p. 100. La production d'énergie hydraulique a représenté 77.8 p. 100 du total de l'énergie produite.

Projets d'aménagements

L'augmentation de la puissance prévue pour 1970 ne représentera que 59 p. 100 du sommet atteint en 1969, soit 2,256 MW, dont 6 p. 100 d'origine thermique. De telles différences dans les progrès accomplis chaque année ne sont pas rares et reflètent, non pas un ralentissement dans l'expansion, mais des étapes dans la réalisation des projets d'aménagements. L'augmentation de la production



View of Hydro Quebec's Outardes 4 plant completed in 1969 with 632 MW capacity.

Vue de la centrale Outardes 4, de l'Hydro-Québec, achevée en 1969, d'une puissance de 632 MW.

Unit sizes and station sizes will continue to increase over the next few years with twenty units of 500 MW and larger providing 11,655 MW or nearly 89% of planned thermal expansion after 1970. 40% of the units and 44% of the capacity will be nuclear fueled. The 11 hydro-electric units rated 475 MW each at Churchill Falls will provide more than 50% of the announced hydro-electric expansion after 1970.

Mica Dam is being constructed under provisions of the Columbia River Treaty.

La construction du barrage Mica se poursuit aux termes des dispositions du Traité du fleuve Columbia.

totale prévue pour les années au-delà de 1970, jusqu'en 1978, permettra d'ajouter 23,087 MW à la puissance installée au pays. Cela représente une augmentation d'environ 58 p. 100 sur la puissance installée prévue pour la fin de 1970. L'augmentation qui sera réellement réalisée dépassera certainement ce total, étant donné que toutes les installations nouvelles prévues pour 1978 n'ont pas encore été définitivement arrêtées. Dans le total des augmentations prévues, y compris les projets pour 1970, les installations thermiques fourniront 57 p. 100, et la proportion de la production thermique, relative à la puissance installée totale lorsque les projets prévus seront achevés, aura augmenté de 32 à 42 p. 100.

La taille des groupes et des centrales continuera d'augmenter au cours des prochaines années avec l'installation de 20 groupes de 500 MW et plus, produisant 11,655 MW soit près de 89 p. 100 de l'expansion de la production thermique prévue au-delà de 1970. Une proportion de 40 p. 100 des groupes et de 44 p. 100 de la puissance sera du domaine nucléaire. Les 11 groupes hydro-électriques, d'une capacité de 475 MW chacun, qui seront installés aux chutes Churchill produiront plus de 50 p. 100 de l'augmentation de la puissance hydro-électrique annoncée après 1970.





Manitoba Hydro has extended the Kelsey station, adding a sixth 33,750-Kw unit.

La Manitoba Hydro a augmenté la puissance de la centrale Kelsey, par l'addition d'un sixième groupe de 33,750 kW.

Summary and Future Prospects

The electric utility growth rate in installed capacity has averaged over 6% per annum since 1915 and a similar growth is forecast for the next 20 years. The growth of electrical generating capacity has exceeded the increase in real gross national product and it is expected to continue this trend for the foreseeable future. In the 42-year period to 1968, GNP increased by an average of 4.23% per year while generation capacity grew by 5.83%. For the period to 1975 a growth rate of 6.55% in installed generating capacity is expected in comparison with a forecast annual growth in GNP of 5.5% per annum. The demands of the electric utility industry for capital funds, currently at about 9% of total capital investment, is thus likely to remain at this level or to increase slightly.

The industry, both in its manufacturing and utility aspects, has made commendable efforts over the years to reduce the cost of its product by improved design and operating practices and by taking advantage of the economies of scale. The significant portion of Canada's capital investment which the industry employs requires a continuing effort to seek further improvement. This need

Sommaire et perspectives d'avenir

Le rythme de croissance des services publics d'énergie électrique, en ce qui concerne la puissance installée, a été en moyenne de 6 p. 100 par année depuis 1915, et l'on prévoit un rythme semblable pour les 20 prochaines années. L'augmentation de la capacité de production a dépassé l'accroissement du produit national brut réel, et l'on pense que cette tendance se maintiendra au cours des prochaines années. Au cours des 42 années, de 1926 à 1968, le PNB a augmenté suivant un rythme moyen de 4.23 p. 100 par année, alors que la capacité de production a augmenté de 5.83 p. 100 par année. Pour la période allant jusqu'en 1975, on prévoit un taux d'accroissement de 6.55 p. 100 de la puissance installée, par rapport au taux d'accroissement prévu de 5.5 p. 100 par an du PNB. Les besoins de capitaux des services publics d'énergie électrique représentent généralement environ 9 p. 100 du total des investissements, et doivent demeurer à ce niveau ou augmenter légèrement au cours des prochaines années.

Cette industrie, à la fois en ce qui concerne la production et les services, a fait au cours des années de

is' currently of special significance with the burden which high interest rates places on a capital intensive industry. Since some of the expansion choices lie between solutions which differ in their division of capital and operating costs, difficult decisions must be made to balance short range and long range cost objectives.

The approximate division of capital between the major elements of electric utility systems is as follows:

	%
Generation	48
Transmission	21
Distribution	25
Other	6

While economies of scale will continue to allow some savings in all of these investment areas, there will be strong pressures from equipment and material costs and from environmental aspects to force costs upwards. Previous development of the more favourable hydro-electric sites and increasing restrictions on thermal plant siting will tend to increase the proportion of future utility investment in transmission systems. Restrictions on right of way availability and the need for improved appearance of transmission structures will put added pressure on the cost of this element. The demand for underground distribution systems is requiring larger investment in this important area of utility cost.

In all of these areas the industry has an important responsibility to both guide and respond to public choice in achieving the best balance consistent with wise use of resources. Increasingly clear explanation of the available alternatives with their technical and economic consequences must be presented to ensure both wise and timely implementation of utility expansion plans.

louables efforts pour abaisser le prix de son produit, en améliorant ses techniques d'exploitation et en profitant des économies rendues possibles par l'extension des opérations. La proportion appréciable du total des investissements canadiens que cette industrie utilise rend nécessaire un effort soutenu pour chercher de nouvelles améliorations. Cet effort est actuellement encore plus important étant donné le fardeau que représente le taux élevé des intérêts pour une industrie exigeant de gros apports. Étant donné que certains des choix en matière d'expansion offrent des différences quant aux frais d'établissement et aux frais d'exploitation, des décisions difficiles doivent être prises pour équilibrer à long et à court terme les questions de coût.

La répartition approximative des investissements entre les principaux secteurs de l'industrie de l'énergie électrique est la suivante:

	%
Production	48
Transport	21
Distribution	25
Autres	6

Quoique la réduction des coûts obtenue grace aux opérations à grande échelle permettra de réaliser quelques économies dans tous ces secteurs, les coûts du matériel et de l'équipement et les conditions extérieures exerceront de fortes pressions sur les prix. La mise en valeur antérieure des sites les plus favorables à la production hydro-électrique et l'augmentation des restrictions apportées à l'implantation des centrales thermiques, tendront à augmenter la proportion des investissements futurs qui sera consacrée aux réseaux de transport. Les restrictions imposées sur les droits de passage et la nécessité d'améliorer sur le plan esthétique les installations de transport seront également des facteurs de hausse du coût de ces installations. Les réseaux de distribution souterrains demandent des investissements plus élevés dans ce secteur important du coût des services.

L'industrie de l'énergie électrique a donc dans tous ces domaines d'importantes responsabilités: elle doit à la fois orienter et satisfaire les besoins du public tout en exploitant les ressources de la manière la plus judicieuse et la plus sage. Elle doit fournir une explication précise des alternatives disponibles et de leurs répercussions techniques et économiques, afin que les programmes d'expansion des services publics soient appliqués en temps voulu et à bon escient.

Highlights by Province

● British Columbia

Two more units rated at 227 MW each were placed in service in the Gordon M. Shrum station on the Peace River and 781 miles of transmission line were added to the related 500 kv AC transmission system. Construction of the Mica Dam under the Columbia River Treaty continued on schedule. Downstream power benefits were received during the year as a result of the early completion of the Hugh Keenleyside (Arrow Lakes) Dam in October 1968. The completion of 21 miles of undersea cable circuit and 26 miles of associated overhead line and doubling both voltage and current rating to 260 kV and 1200 amps. respectively, raised the transmission capacity of the DC transmission system to Vancouver Island from 78 MW to 312 MW; this is a monopolar system with ground return path.

● Yukon Territory

The first 138-kV transmission line in the Yukon, a 250-mile single-circuit woodpole line, was placed in service to supply power from Whitehorse to the Anvil Mining Corporation at Faro. An 8-MW hydro-electric unit was added to the Whitehorse plant to meet, in part, this additional mining load.

● Northwest Territories

Most generating plant changes in 1969 involved reallocation of diesel units to suit local needs. Substantial additions will take place in 1970 to a number of generating stations when over 20 MW in diesel plant capacity is to be added to the existing system total of 66 MW installed.

● Alberta

The major addition during 1969 was a 150-MW thermal unit at the Battle River plant of Canadian Utilities. Future plans include a 165-MW unit in 1970 (Edmonton Power) and a second 300-MW unit in 1971 at Sundance (Calgary Power). The next significant hydro-electric addition will be two 54-MW units at Bighorn on the North Saskatchewan River, planned by Calgary Power for 1972. Transmission additions in the province included 168 circuit miles at 144-kV.

Revue par province

● Colombie-Britannique

Deux nouveaux groupes, d'une capacité de 227 MW chacun, ont été mis en service à la centrale Gordon M. Shrum sur la rivière de la Paix et une ligne de transport de 781 milles a été ajoutée au réseau de transport correspondant sous 500 kV à CA. La construction du barrage Mica, conformément au Traité du fleuve Columbia, s'est poursuivie selon le programme prévu. L'achèvement anticipé du barrage Hugh Keenleyside (lacs Arrow) en octobre 1968 a permis de bénéficier au cours de l'année d'une puissance supplémentaire en aval. L'achèvement d'un circuit de câbles sous-marins de 21 milles et d'une ligne aérienne associée de 26 milles, ainsi que le doublement de la tension et de l'intensité du courant (portées respectivement à 260 kV et à 1200 A) ont augmenté la puissance de transport à courant continu du réseau jusqu'à l'île Vancouver de 78 MW à 312 MW; il s'agit d'un système unipolaire avec retour par la terre.

● Territoire du Yukon

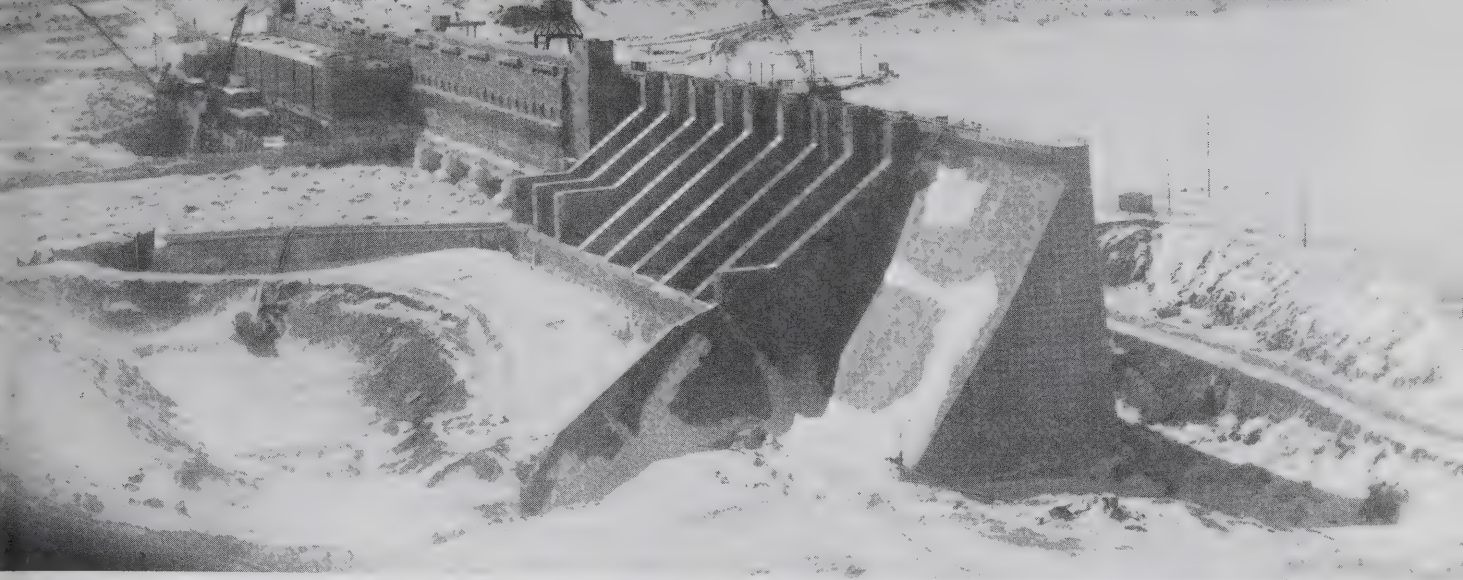
La première ligne de transport sous 138 kV au Yukon (une ligne simple de 250 milles, sur poteaux de bois) a été mise en service pour transporter le courant de Whitehorse à l'Anvil Mining Corporation à Faro. Un groupe hydro-électrique de 8 MW a été ajouté à la centrale de Whitehorse pour répondre, en partie, à la charge supplémentaire provenant de cette exploitation minière.

● Territoires du Nord-Ouest

La plupart des transformations qui ont eu lieu en 1969 dans les centrales se sont bornées à une nouvelle répartition des groupes diesel, afin de mieux répondre à la demande locale. Une augmentation notable est prévue pour 1970, dans un certain nombre de stations; la puissance installée totale de 66 MW sera augmentée de plus de 20 MW à l'aide de groupes diesel.

● Alberta

La principale réalisation en 1969 a été l'installation d'un groupe thermique de 150 MW à la centrale de Battle River de la Canadian Utilities. Les projets prévoient un groupe de 165 MW pour 1970 (Edmonton Power) et un deuxième de 300 MW pour 1971 à Sundance (Calgary Power). Ensuite viendra l'installation de deux groupes hydrauliques importants, de chacun 54 MW, à Bighorn sur la rivière Saskatchewan-Nord, prévue par la Calgary Power pour 1972. Quelque 168 milles de circuit sous 144 kV ont été ajoutés au réseau de la province.



Construction continues through the winter at Manitoba Hydro's Kettle plant on the Nelson River.

La construction de la centrale Kettle, de la Manitoba Hydro, sur le fleuve Nelson, se poursuit durant l'hiver.

● Saskatchewan

1969 saw the completion of the first of three 150-MW coal fired thermal units planned for Boundary Dam. The transmission system was reinforced by the addition of a 115-mile 230-kV circuit and future plans will add 120 miles of 230-kV and upgrade 115 miles of existing 138-kV circuit to operation at 230 kV.

● Manitoba

A 105-MW thermal unit was added at Brandon and two 12-MW gas turbines were installed in the Selkirk Station to increase the province's thermal capability by 129 MW. A sixth 33-MW generator unit at Kelsey on the Nelson River raised the capacity of this Northern Manitoba hydro station to 202.5 MW. The AC transmission system was extended by 126 miles at 115 kV and 106 miles at 66 kV. Planned expansion includes 140 miles at 138 kV and 165 miles at 230 kV.

Major expansion plans centre on the Nelson River development with the first units of the Kettle plant being scheduled for 1971. Construction of the related 1,112 circuit miles of ± 450 -kV high voltage direct current transmission is in progress and is scheduled for completion in August, 1971; the associated converter terminal equipment will provide 810 MW of transmission capacity for the initial service date. Some uncertainty exists in connection with the long term development of the Nelson River pending re-examination of various aspects of water diversion and storage pertaining to the Churchill River, Southern Indian Lake and Lake Winnipeg.

● Saskatchewan

En 1969 a été terminée l'installation du premier des trois groupes thermo-électriques au charbon de 150 kV prévus pour le barrage Boundary. Le réseau de transport a été renforcé par l'addition d'un circuit sous 230 kV de 115 milles, et l'on projète l'addition d'un circuit sous 230 kV de 120 milles et la transformation d'un circuit de 115 milles fonctionnant actuellement sous 138 kV en un circuit sous 230 kV.

● Manitoba

Un nouveau groupe thermo-électrique de 105 MW a été installé à la station Selkirk pour augmenter la puissance thermique de la province de 129 MW. Un sixième générateur de 33 MW, à Kelsey sur la rivière Nelson, a porté la puissance de cette station hydro-électrique du nord du Manitoba à 202.5 MW. Le réseau de transport à courant alternatif a été augmenté d'une ligne de 126 milles sous 115 kV et d'une ligne de 106 milles sous 66 kV. Les projets d'expansion prévoient une ligne de 140 milles sous 138 kV et une ligne de 165 milles sous 230 kV.

D'importants programmes d'expansion concernent l'aménagement de la rivière Nelson; l'installation des premiers groupes à la centrale de Kettle est prévue pour 1971. La construction du circuit correspondant à cette centrale, de 1,112 milles et sous une tension de ± 450 kV à courant direct, se poursuit et doit être achevée en août 1971; les aménagements terminaux associés fourniront une puissance de transport de 810 MW dès le début de la mise en service. Quelques incertitudes demeurent quant à l'aménagement à long terme de la rivière Nelson; elles dépendent d'une nouvelle étude sur les retenues et les dérivations d'eau relatives à la rivière Churchill, au lac sud des Indiens et au lac Winnipeg.

● Ontario

The placing in service of the first two 500-MW units gave the Lambton thermal station the distinction of having the largest unit size in Canada; this station is the third largest thermal station in Canada after Lakeview and R.L. Hearn. By the end of 1970 the Lambton capacity will be doubled making it second only to Lakeview. This was somewhat overshadowed by the announcement of future plans for thermal plant expansion including four 800-MW units at the Bruce Nuclear Station, four 500-MW oil-fired units at Lennox near Kingston, and 4 additional coal-fired units at Nanticoke. These additions, when added to previously committed expansions of four 500-MW units at Nanticoke and four 540-MW units at the Pickering Nuclear Station, will provide total expansion plans after 1970 of 11,745 MW in fossil and nuclear fueled capacity. Modest hydro expansion continues with somewhat over 200 MW added in 1969 and scheduled for each of the years 1970 and 1971.

The Transmission expansion related primarily to the completion and strengthening of the 230 kV interconnection between east and west regions of the province with a total of 610 circuit miles of 230 kV line added.

● Ontario

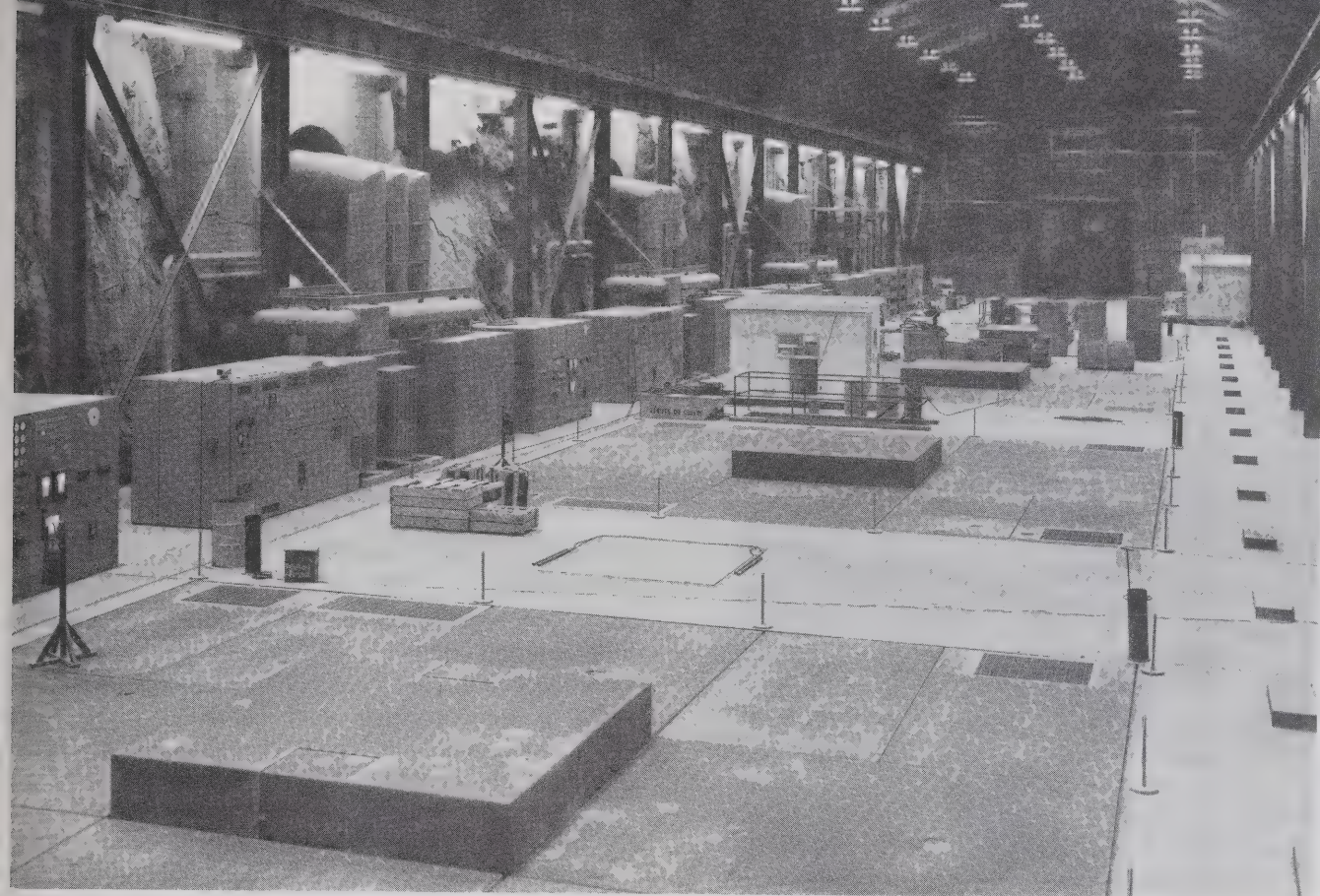
La mise en service des deux premiers groupes d'une puissance de 500 MW a fait de la centrale thermique de Lambton la plus importante de tout le Canada, par la taille de ses groupes. Cette centrale est la troisième en importance des centrales thermiques du Canada, après celles de Lakeview et de R.L. Hearn. Vers la fin de 1970, la puissance de la centrale de Lambton sera doublée, ce qui fera d'elle la seconde au Canada après Lakeview. Cette réalisation est quelque peu passée inaperçue avec l'annonce de futurs projets d'expansion dans le domaine thermo-électrique, soit quatre groupes de 800 MW à la centrale nucléaire de Bruce, quatre groupes de 500 MW fonctionnant au pétrole à Lennox près de Kingston, et quatre nouveaux groupes fonctionnant au charbon à Nanticoke. Ces nouveaux groupes ajoutés à l'installation de quatre groupes de 500 MW à Nanticoke et de quatre groupes de 540 MW à la centrale nucléaire de Pickering, porteront l'augmentation totale prévue pour les années postérieures à 1970 à 11,745 MW, produits par l'énergie nucléaire et les combustibles fossiles. L'expansion hydro-électrique se poursuit plus modestement avec une augmentation d'un peu plus de 200 MW en 1969 et la même augmentation prévue pour les années 1970 et 1971.

L'expansion du réseau de transport s'est borné à l'achèvement et au renforcement de l'interconnexion sous 230 kV entre l'est et l'ouest de la province, avec l'addition de 610 milles sous 230 kV de circuit.



Ontario Hydro's Nanticoke station will have an ultimate capacity of 4,000 MW.

La puissance totale de la centrale de Nanticoke, de l'Hydro-Ontario, sera de 4,000 MW.



Hydro Quebec's Outarde 3 station; interior view of the powerhouse.

La centrale Outardes 3, de l'Hydro-Québec: vue intérieure de la centrale.

• Quebec

Major additions were made to the Manicouagan-Outardes development with the completion of 1,388 MW at Outardes 3 and Outardes 4 in 1969. This completes nearly 50% of total planned generating capacity in this region and by 1972, with completion of an additional 1,322 MW in Manic 5, the total will be raised to 70% of the final 5,540 MW. The most recently committed development of 1,176 MW at Manic 3 is scheduled for completion in 1976. Much of Quebec's load growth in the period 1972-76 will be met from the Churchill Falls development under a long term contract with Brinco. The nuclear plant at Gentilly will add 250 MW to the capability of the province in 1971.

• New Brunswick

The 100-MW thermal generating unit at Dalhousie was the principal addition to plant capacity in 1969. Future plans involve consideration of additions to the Mactaquac hydro station and possible extensions of thermal generating capacity which are not yet firmly committed.

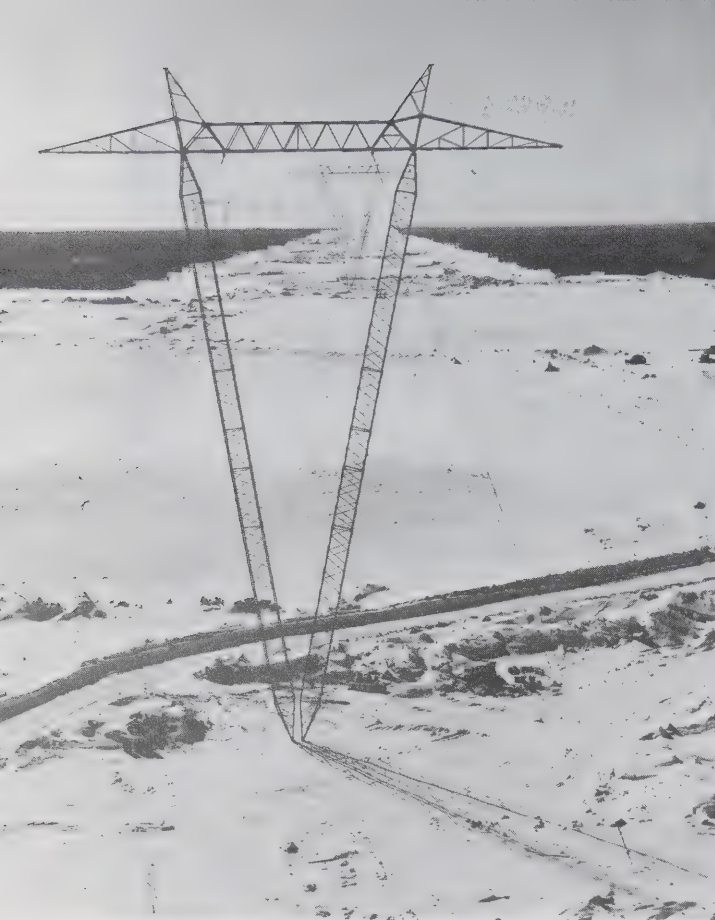
This has been a very active year in transmission expansion plans. A 320-MW back-to-back direct-current

• Québec

Le plus gros de l'expansion a été réalisé aux chantiers Manicouagan-Outardes avec l'installation d'une puissance de 1,388 MW à Outardes 3 et 4 en 1969. La puissance totale prévue pour cette région est ainsi réalisée à 50 p. 100 et d'ici 1972 l'installation de 1,322 MW de puissance supplémentaire à Manic 5 portera cette proportion à 70 p. 100 de la puissance totale finale de 5,540 MW. Le dernier aménagement prévu d'une puissance de 1,176 MW à Manic 3 devrait être achevé en 1976. La plus grande partie de l'accroissement de la demande au Québec entre les années 1972-1976 sera absorbée par la production des aménagements de Churchill Falls, conformément à une entente à long terme signée avec la Brinco. La centrale nucléaire de Gentilly ajoutera 250 MW à la puissance de la province en 1971.

• Nouveau-Brunswick

L'installation d'un groupe thermique de 100 MW à Dalhousie a constitué la principale addition à la puissance de la centrale en 1969. Les projets pour l'avenir envisagent l'agrandissement de la centrale hydro-électrique de Mactaquac, et une augmentation éventuelle de la puissance thermique, ce qui n'est pas encore définitif.



Part of the 735-kV transmission system which will carry power from Churchill Falls.

Vue d'une partie des lignes de transport sous 735 kV qui transporteront le courant depuis Churchill Falls.

L'année 1969 a été très fertile en programmes d'expansion des lignes de transport. Un transformateur terminal de courant direct adossé d'une puissance de 320 MW a été commandé pour Eel River en vue d'une interconnexion avec l'Hydro-Québec. Cette installation comprendra des thyristors à l'état solide et sera la première à employer du matériel de transformation fabriqué au Canada, pour un réseau à courant continu à haute tension. Cette interconnexion rendra plus aisé l'achat au Québec d'une partie de l'énergie produite aux chutes Churchill, et excédentaire par rapport aux besoins du Québec au cours des années 1972 à 1976, et permettra ainsi des échanges avantageux pour les deux provinces.

converter terminal was committed for Eel River to provide an interconnection with Hydro Quebec. The equipment will use solid state thyristors and is the first to involve converter valve equipment manufactured in Canada for a high voltage DC system. The interconnection will facilitate the purchase from Quebec of a portion of Churchill Falls energy, surplus to Quebec's needs in the period 1972-76, and subsequently allow for economic interchange to the benefit of both provinces.

Une entente a été signée avec un groupe de services d'utilité publique de la Nouvelle-Angleterre en vue d'une interconnexion qui permettra au Nouveau-Brunswick de vendre de la puissance de pointe dans des conditions intéressantes. Dans ce but, on a prévu un circuit de transport sous 345 kV, et une demande de licence d'exportation a été présenté à l'Office national de l'énergie.

An agreement was reached with a group of New England utilities for an interconnection which will permit New Brunswick to sell peaking power at advantageous terms. A 345-kV transmission circuit has been planned for this purpose and application made to the National Energy Board for an export permit.

• Nouvelle-Écosse

• Nova Scotia

La Nova Scotia Power Commission a ajouté 230 MW à sa puissance thermique en 1969, soit 150 MW à la centrale de Trenton et l'installation d'un groupe de 80 MW à Point Tupper; cette centrale fournira également de la vapeur à une usine d'eau lourde voisine appartenant à la Canadian General Electric. Une nouvelle augmentation de la puissance se produira lorsque la Nova Scotia Light and Power aura achevé l'installation d'un groupe de 105 MW à Tufts Cove en 1971.

Thermal capacity totalling 230 MW was added in 1969 by the Nova Scotia Power Commission. This consisted of a 150-MW extension at Trenton and an 80-MW unit at Point Tupper; the latter will also supply steam to the nearby Canadian General Electric heavy water plant. Further expansion of generation capacity will take place when Nova Scotia Light and Power adds a 105-MW unit to Tufts Cove in 1971.

L'amélioration du réseau de transport a compris la construction d'une ligne de 88 milles sous 138 kV en 1969 et d'une ligne de 132 milles non encore achevée, prévue sous la même tension, mais dont une partie pourra servir au transport sous 230 kV.

Transmission expansion included 88 miles at 138 kV added in 1969 and 132 miles planned for future addition at this voltage, some of which will be suitable for upgrading to 230 kV.

• Newfoundland and Labrador

Load growth in the Island of Newfoundland will be met by the addition of 153 MW in two units to the Baie d'Espoir hydro plant in 1970 and the first of two 150-MW oil fired thermal units at Holyrood. The second Holyrood addition is scheduled for 1971.

Transmission capacity was increased in 1969 by the addition of 55 miles of 230-kV line.

The tremendous development at Churchill Falls continued on schedule with first power planned for 1971 and commercial delivery to Hydro Quebec over the 735-kV transmission system in May, 1972. A total of 5,225 MW in 11 hydro generator units is scheduled to be placed in service by 1976.

Studies are underway to determine the feasibility of further generation developments at sites on the river below Churchill Falls.

• Prince Edward Island

No major changes were made in 1969. An additional 20-MW of thermal capacity is scheduled for 1971.

• Terre-Neuve et Labrador

Pour répondre à l'accroissement de la demande en électricité dans l'île de Terre-Neuve, on a prévu d'augmenter la puissance de 153 MW, grâce à deux groupes que l'on installera en 1970 à la centrale hydraulique de la baie d'Espoir, et à l'installation du premier de deux groupes thermiques (au pétrole) à Holyrood. Le deuxième groupe (mazout) devrait être installé en 1971.

La capacité du réseau de transport a été augmentée en 1969 par la construction d'une ligne de 55 milles sous 230 kV.

Les grands travaux d'aménagement des chutes Churchill seront poursuivis selon le programme fixé; la production doit commencer en 1971 et les ventes à l'Hydro-Québec, par le réseau de transport sous 735 kV, doivent débiter en mai 1972. Une puissance totale de 5,225 MW, fournie par 11 groupes hydrauliques, sera disponible d'ici 1976.

Des études de factibilité sont actuellement en cours relativement à d'autres emplacements situés en aval des chutes Churchill.

• Île-du-Prince-Édouard

Aucune modification notable n'a été enregistrée en 1969. On prévoit pour 1971 une augmentation de 20 MW de la puissance thermique.

A new 15-MW unit was placed in service at Battle River by Canadian Utilities in 1969.

En 1969, la Canadian Utilities a mis en service un nouveau groupe de 150 MW à Battle River.



TABULAR SUMMARY

TABLEAU SOMMAIRE

HYDRO-ELECTRIC CAPACITY				PUISSANCE HYDRO-ÉLECTRIQUE										
DEVELOPMENT AMENAGEMENT	RIVER RIVIERE	INSTALLED DURING 1969 INSTALLATION en 1969			TOTAL STATION CAPACITY AT END 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE						REMARKS REMARQUES	
		No of Units Total Turbine Puisance totale des turbines en kW			PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		IN 1970		POUR 1970		APRÈS 1970			
		No of Units Total Turbine Puisance totale des turbines en kW	Generator Puisance totale des générateurs en kW	Turbines HP	Generator kW	No of Units Total Turbine Puisance totale des turbines en kW	Generator kW	No of Units Total Turbine Puisance totale des turbines en kW	Generator kW	No of Units Total Turbine Puisance totale des turbines en kW	Generator kW	No of Units Total Turbine Puisance totale des turbines en kW		
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY														
Gordon M. Shrum	Peace	2	620,000	454,000	1,550,000	1,135,000	—	—	—	3	930,000	681,000		[Unit 6 scheduled for 1971; units 7 and 8 for 1972. L'achèvement du groupe 6 est prévu pour 1971; celui des groupes 7 et 8 est prévu pour 1972.]
Jordan River	Jordan	—	—	—	38,985	26,400	—	—	—	1	220,000	150,000		[The small existing plant will be replaced by a 150,000 kW, peaking plant in 1971. La petite centrale qui existe actuellement doit être remplacée par une centrale de capacité de pointe de 150,000 kW, en 1971.]
Total			620,000 54,750	454,000 38,814	(new capacity) (removed)						1,150,000	831,000		
			565,250	415,186	(net increase)									

THERMAL-ELECTRIC CAPACITY				PUISSANCE THERMO-ÉLECTRIQUE											
DEVELOPMENT AMÉNAGEMENT	TYPE	INSTALLED DURING 1969 INSTALLATION en 1969			TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE						REMARKS REMARQUES		
		No of Units		Total Capacity en kW	KW Puisance totale en kW	No of Units		Total Capacity en kW	Puisance totale en kW		Total Capacity en kW				
		No of Units	Total Capacity en kW	No of Units		Total Capacity en kW	No of Units	Total Capacity en kW							
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY															
Burrard	S	—	—	—	750,000	—	—	—	—	—	Correction to unit rating Correction de la capacité du groupe.				
Fort Nelson	IC	2	1,100	4,161	4,161	1	3,000	1	3,000	—	Second 3,000 kW unit in 1971. Un second groupe de 3,000 kW est prévu pour 1971.				
Golden	GT	1	5,000	8,000	8,000	—	—	—	—	—					
Port Hardy	IC	3	3,000	—	—	—	—	—	—	—					
	GT	1	5,000	10,200	10,200	—	—	—	—	—					
Hazelton	IC	2	1,100	3,150	3,150	—	—	—	—	—					
McBride	IC	2	1,160	3,400	3,400	—	—	—	—	—					
Bella Coola	IC	1	500	1,807	1,807	2	1,200	—	—	—					
Valemount	IC	2	2,000	3,550	3,550	—	—	—	—	—					
Stewart	IC	5	2,611	2,611	2,611	1	1,136	—	—	—	Some capacity added before 1969, not reported previously. La puissance avait été augmentée avant 1969, mais elle n'avait pas encore été signalée.				

Alert Bay	IC	6	1,550	1,550	—	—	—	—
Blue River	IC	5	1,750	1,750	—	—	—	—
Masset	IC	5	2,450	2,450	—	—	—	—
Sandspit	IC	—	—	1,700	1	1,000	—	—
Total	puissance nouvelle puissance enlevée réduction nette		27,661 84,016 56,355	new capacity removed net reduction	6,336	3,000	—	—
Combined Hydro and Thermal Total	augmentation nette puissance totale hydro-électrique et thermo-électrique		361,495	net increase	6,336	834,000	—	—

Some capacity added before 1969, not reported previously.
La puissance avait été augmentée avant 1969, mais elle
n'avait pas encore été signalée.

Northwest Territories

Territoires du Nord - Ouest

THERMAL-ELECTRIC CAPACITY				PUISSANCE THERMO-ÉLECTRIQUE						
DEVELOPMENT AMÉNAGEMENT	TYPE	GENRE	No of Units	INSTALLED DURING 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969	PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE			REMARKS REMARQUES
				Total Capacity en KW	PUISSANCE TOTALE en KW		IN 1970	POUR 1970	AFTER 1970 APRÈS 1970	
NORTHERN CANADA POWER COMMISSION										
Yellowknife	IC	—	—	—	1,000	1	5,180	—	—	—
Frobisher Bay	IC	1	2,585	—	5,045	1	500	—	—	—
Inuvik	IC	1	600	—	5,060	—	—	—	—	—
Pine Point	IC	—	—	—	—	1	5,180	—	—	—
Fort Smith	GT	1	1,500	—	2,460	1	5,180	—	—	—
Plants under 1500 KW	IC	—	—	—	—	—	780	—	—	—
Total	puissance nouvelle puissance enlevée augmentation nette		5,894 2,772 3,122	New capacity Removed Net increase	20,740					

HYDRO-ELECTRIC CAPACITY				PUISSANCE HYDRO-ÉLECTRIQUE									
DEVELOPMENT AMÉNAGEMENT	RIVER RIVIÈRE	INSTALLED DURING 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE						REMARKS REMARQUES	
		INSTALLATION en 1969				IN 1970		POUR 1970		AFTER 1970			
		No of Units Total Turbines des turbines en HP Puisance totale des turbines en kW	Turbines en HP Générateurs en kW	No of Units Total Turbines des turbines en HP Puisance totale des générateurs en kW	No of Units Total Turbines des turbines en HP Puisance totale des générateurs en kW	No of Units Total Turbines des turbines en HP Puisance totale des générateurs en kW	No of Units Total Turbines des turbines en HP Puisance totale des générateurs en kW	No of Units Total Turbines des turbines en HP Puisance totale des générateurs en kW					
NORTHERN CANADA POWER COMMISSION													
Whitehorse	Yukon	1	11,000	8,000	26,000	19,390	—	—	—	—	—	—	
Total			11,000	8,000									

THERMAL-ELECTRIC CAPACITY					PUISSANCE THERMO-ÉLECTRIQUE							REMARKS REMARQUES		
DEVELOPMENT AMÉNAGEMENT	TYPE	GENRE		INSTALLED DURING 1969 INSTALLATION en 1969	TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969	PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE								
		No of Units Total Capacity en kW	Puisance totale en kW			Kw	IN 1970		POUR 1970 en kW	Total capacity Kw	Puisance totale en kW			
							No of Units Total capacity Kw	No of Units Total capacity Kw						
NORTHERN CANADA POWER COMMISSION														
Dawson	IC	1	500	1,250	—	—	—	—	—	—	—	—	—	
Faro	IC	1	500	500	1	5,150	—	—	—	—	—	—	—	
Whitehorse	IC	—	—	9,070	1	5,150	—	—	—	—	—	—	—	
YUKON ELECTRIC COMPANY														
Watson Lake	IC	1	350	1,800	—	—	—	—	—	—	—	—	—	
Miscellaneous additions	IC	—	70	—	—	—	—	—	—	—	—	—	—	
Total					puissance nouvelle puissance enlevée réduction nette		1,420 1,850 430		10,300					
Combined Hydro and Thermal Total					augmentation nette Puisance totale hydro-électrique et thermo-électrique		7,570		10,300					

HYDRO-ELECTRIC CAPACITY				PUISSANCE HYDRO-ÉLECTRIQUE												
DEVELOPMENT AMÉNAGEMENT	RIVER RIVIÈRE	INSTALLED DURING 1969 INSTALLATION en 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETEE						REMARKS REMARQUES				
						IN 1970		POUR 1970		AFTER 1970			APRÈS 1970			
		No of Units Nombre de groupes	Turbines on line Turbines en ligne	Generator capacity Capacité des générateurs en MW	Turbines on line Turbines en ligne	Generator capacity Capacité des générateurs en MW	No of Units Nombre de groupes	Turbines on line Turbines en ligne	Generator capacity Capacité des générateurs en MW	No of Units Nombre de groupes	Turbines on line Turbines en ligne		Generator capacity Capacité des générateurs en MW	No of Units Nombre de groupes	Turbines on line Turbines en ligne	Generator capacity Capacité des générateurs en MW
CALGARY POWER LIMITED																
Bighorn	North Saskatchewan	—	—	—	—	—	—	—	—	—	—	—	—	—	108,000	Scheduled for completion in 1972. Achèvement prévu pour 1972.
Total																108,000

THERMAL-ELECTRIC CAPACITY				PUISSANCE THERMO-ÉLECTRIQUE											
DEVELOPMENT AMÉNAGEMENT	TYPE	CENTRE		INSTALLED DURING 1969 INSTALLATION en 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETEE						REMARKS REMARQUES	
		No of Units Nombre de groupes	Kw en Kw	Total Capacity Capacité en Kw	Kw en Kw	No of Units Nombre de groupes	Total Capacity Capacité en Kw	IN 1970		POUR 1970		AFTER 1970 APRÈS 1970			
								Kw en Kw	Total Capacity Capacité en Kw	No of Units Nombre de groupes	Total Capacity Capacité en Kw	Kw en Kw	Total Capacity Capacité en Kw		
CANADIAN UTILITIES LIMITED															
Fort McMurray	GT	1	3,000	—	10,050	—	—	—	—	—	—	—	—	—	Two 600 kW units at Nipisi. 70 kW capacity at Fort McKay. Deux groupes de 600 kW à Nipisi. Une augmentation de 70 kW de la capacité à Fort McKay.
Battle River	S	1	150,000	—	216,000	—	—	—	—	—	—	—	—	—	
Various Locations (Nipisi and Fort McKay)	IC	—	1,270	—	—	—	—	—	—	—	—	—	—	—	
NORTHLAND UTILITIES LIMITED															
Fairview	IC	—	—	—	6,000	—	—	—	—	—	—	—	—	—	One unit of 3,000 kW capacity removed from service. Un groupe de 3,000 kW a été mis hors de service.
Various Locations	IC	—	540	—	—	—	—	—	—	—	—	—	—	—	
Zama Lake	IC	—	—	—	.0	—	—	—	—	—	—	—	—	—	
CALGARY POWER LIMITED															
Sundance (nr. Wabamun)	S	—	—	—	—	—	—	—	1	300,000	—	—	—	—	Scheduled for operation in 1971. Mise en service prévue pour 1971.
EDMONTON POWER															
Clover Bar (Edmonton)	S	—	—	1	—	165,000	1	165,000	—	—	—	—	—	—	First 165,000 kW unit scheduled for 1970; second 165,000 kW unit scheduled for 1973. Un premier groupe de 165,000 kW est prévu pour 1970; un second groupe de même puissance est prévu pour 1974.

Foot Hills Hospital - Calgary	S	1	5,000	7,450	—	—	—
ALBERTA DEPARTMENT OF PUBLIC WORKS							
Alberta Hospital (Edmonton)	S	—	—	—	1	2,500	—
Total	puissance nouvelle puissance enlevée augmentation nette		159,810 8,150 151,660	new capacity removed net increase		167,500	465,000
Combined Hydro and Thermal Total			151,660			167,500	573,000
Puissance totale Hydro-Electrique et thermo-Electrique							

Saskatchewan

Saskatchewan

THERMAL-ELECTRIC CAPACITY

PUISSANCE THERMO-ÉLECTRIQUE

DEVELOPMENT AMÉNAGEMENT	TYPE	GENRE	INSTALLED DURING 1969 INSTALLATION en 1969			TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969	PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE				REMARKS REMARQUES			
			Total Capacity KW	Puisissance totale en kW	KW		No of Units	Nombre de groupes	en kW	Puisissance totale KW		No of Units	Total Capacity KW	AFTER 1970 APRÈS 1970
SASKATCHEWAN POWER CORPORATION														
Boundary Dam (Estevan)	S	1	150,000	282,000	—	—	2	300,000	One 150,000 kW unit planned for 1971 completion. One 150,000 kW unit scheduled for 1973 completion. Un groupe de 150,000 kW est prévu pour 1971. Un groupe de même puissance est prévu pour 1973.					
Queen Elizabeth (Saskatoon)	S	—	—	132,000	—	—	1	100,000	Planned for 1971 completion. Achèvement prévu pour 1971.					
Total			150,000					400,000						

HYDRO-ELECTRIC CAPACITY				PUISSANCE HYDRO-ÉLECTRIQUE										
DEVELOPMENT AMÉNAGEMENT	RIVER RIVIÈRE	INSTALLED DURING 1969		TOTAL STATION CAPACITY AT END 1969		PROPOSED FOR INSTALLATION						REMARKS REMARQUES		
		INSTALLATION en 1969		PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		INSTALLATION PROJETÉE								
						IN 1970		POUR 1970		AFTER 1970				
		No of Units Total Turbines Capacité HP Puissance totale des turbines en kW	Turbine HP	Generator in HP Générateurs en kW	No of Units Total Turbines Capacité HP Puissance totale des turbines en kW	Total Turbines des turbines en HP	Total Capacity des turbines en HP	Total Capacity des turbines en kW	No of Units Total Turbines Capacité HP Puissance totale des turbines en kW	Total Capacity des turbines en HP	Total Capacity des turbines en kW		Puissance totale des générateurs en kW	
MANITOBA HYDRO														
Kettle	Nelson													
Kelsey	Nelson	1	42,000	33,750	252,000				12	1,680,000	1,219,200			Initially 406,400 kW scheduled for installation On prévoit l'installation, pour 1972 environ, d'une puissance de 406,400 kW.
Total			42,000	33,750									1,680,000	1,219,200

Initially 406,400 kW scheduled for installation by 1971.
On prévoit l'installation, pour 1972 environ, d'une
puissance de 406,400 kW.

THERMAL-ELECTRIC CAPACITY				PUISSANCE THERMO-ÉLECTRIQUE								
DEVELOPMENT AMÉNAGEMENT	TYPE	INSTALLED DURING 1969 INSTALLATION en 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE				REMARKS REMARQUES		
		No of Units Nombre de groupes		en KW Puisance totale		IN 1970		POUR 1970			AFTER 1970 APRES 1970	
		Total capacity KW	Puissance totale en KW	Total capacity KW	No of Units en KW	Total capacity KW	No of Units en KW	Total capacity KW	Puissance totale en KW			
MANITOBA HYDRO												
Selkirk	GT	2	23,800	179,600	—	—	—	—	—	—	—	
Various Northern Locations	IC	4	300	—	—	—	—	—	—	—	—	
Brandon	S	1	105,000	237,000	—	—	—	—	—	—	—	
Total			129,100	—	—	—	—	—	—	—	—	
Combined Hydro and Thermal Total			162,850			33,750					1,219,200	
Puisance totale Hydro-Electrique et thermo-Electrique												

HYDRO-ELECTRIC CAPACITY				PUISSANCE HYDRO-ÉLECTRIQUE								
DEVELOPMENT AMÉNAGEMENT	RIVER RIVIÈRE	INSTALLED DURING 1969 INSTALLATION en 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE				REMARKS REMARQUES		
		Turbines HP		Generator kW Turbines en kW		IN 1970		POUR 1970			AFTER 1970	
		No of units Total Turbine Capacité HP	No of units Total Turbine Capacité HP	No of units Total Turbine Capacité kW	No of units Total Turbine Capacité kW	No of units Total Turbine Capacité HP	No of units Total Turbine Capacité kW	No of units Total Turbine Capacité HP	No of units Total Turbine Capacité kW			
ONTARIO HYDRO												
Stewartville	Madawaska	2	136,000	91,800	220,000	153,000	—	—	—	—	—	This completes the redevelopment of the Madawaska River. <i>Ceci complète le programme de remise en valeur de la rivière Madawaska.</i>
Aubrey Falls	Mississagi	2	200,000	130,150	200,000	130,150	—	—	—	—	—	
Wells	Mississagi	—	—	—	—	—	2	300,000	203,300	—	—	
Lower Notch	Montreal	—	—	—	—	—	—	2	340,000	228,000	—	
Total			336,000	221,950		500,000	203,300	340,000	228,000			Both units scheduled for service in 1971. <i>Les deux groupes sont prévus pour 1971.</i>

[This completes the redevelopment of the
Madawaska River.
Ceci complète le programme de remise en valeur
de la rivière Madawaska.

[Both units scheduled for service in 1971.
Les deux groupes sont prévus pour 1971.

THERMAL-ELECTRIC CAPACITY					PUISSANCE THERMO-ÉLECTRIQUE				
DEVELOPMENT AMÉNAGEMENT	TYPE	INSTALLED DURING 1969 INSTALLATION en 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969	PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE			REMARKS REMARQUES	
		No of Units Total Capacity en kW	kW		No of Units Total Capacity en kW	No of Units Total Capacity en kW	No of Units Total Capacity en kW		
ONTARIO HYDRO									
Lambton (Sarnia)	S	2	1,030,000	2	1,000,000	—	—	[Complete 1970. [Achèvement en 1970.	
Nanticoke (near Port Dover)	S	—	—	—	—	8	4,000,000	[Eight 500,000 kW units to come into service one each [huit groupes de 500,000 kW doivent entrer en service [year 1971-1978. [successivement, un par an de 1971 à 1978.	
Lennox (West of Kingston)	S	—	—	—	—	4	2,295,000	[Units to come into service in 1974, 1975, 1976 and 1977. [Les groupes doivent entrer en service en 1974, 1975, [1976 et 1977.	
Pickering (near Toronto)	N	—	—	—	—	4	2,160,000	[Two units in service in 1971 and one in each of 1972 [and 1973. [Deux groupes entreront en service en 1971 et deux [autres en 1972 et 1973 respectivement.	
- Pickering Auxiliary Units	GT	—	—	—	—	6	45,000	[In service in 1971, 1972 and 1973.	
Bruce (near Kincardine)	N	—	—	—	—	4	3,200,000	[Entrée en service en 1971, 1972 et 1973.	
- Bruce Auxiliary Units	GT	—	—	—	—	—	45,000	[Units in service successively in 1975, 1976, 1977 and [1978.	
Total		1,000,000		1,000,000		11,745,000		[Les groupes entreront en service successivement en [1975, 1976, 1977 et 1978.	
Combined Hydro and Thermal Total		1,221,250		1,223,300		11,973,000		[In service in 1975. [L'entrée en service t prévue pour 1975.	

[Complete 1970.
Achèvement en 1970.

[Eight 500,000 kW units to come into service one each
year 1971-1978.
Huit groupes de 500,000 kW doivent entrer en service
successivement, un par an de 1971 à 1978.

[Units to come into service in 1974, 1975, 1976 and 1977.
Les groupes doivent entrer en service en 1974, 1975,
1976 et 1977.

[Two units in service in 1971 and one in each of 1972
and 1973.
Deux groupes entreront en service en 1971 et deux
autres en 1972 et 1973 respectivement.

[In service in 1971, 1972 and 1973.
Entrée en service en 1971, 1972 et 1973.

[Units in service successively in 1975, 1976, 1977 and
1978.
Les groupes entreront en service successivement en
1975, 1976, 1977 et 1978.

[In service in 1975.

[L'entrée en service est prévue pour 1975.

Combined Hydro and Thermal Total
Puisance totale hydro-électrique et thermo-électrique

HYDRO-ELECTRIC CAPACITY				PUISSANCE HYDRO-ÉLECTRIQUE																	
DEVELOPMENT AMÉNAGEMENT	RIVER RIVIÈRE	INSTALLED DURING 1969		TOTAL STATION CAPACITY AT END 1969		PROPOSED FOR INSTALLATION						REMARKS REMARQUES									
		INSTALLATION en 1969		PUISSANCE TOTALE DE LA FIN DE 1969		INSTALLATION PROJETÉE															
		No of Units Total Turbine Puisance totale des turbines en kW	Turbine HP Puisance totale des générateurs en kW	Generator kW Turbine HP Puisance totale des générateurs en kW	No of Units Total Turbine Puisance totale des turbines en kW	IN 1970	POUR 1970	AFTER 1970	APRÈS 1970												
HYDRO QUÉBEC																					
Première Chute	Ottawa (upper)	2	84,800	62,100	127,200	93,150	—	—	1	42,400	31,050	Fourth and final unit scheduled 1973. L'achèvement du quatrième et dernier groupe est prévu pour 1973.									
Manic 5	Manicouagan	—	—	—	—	—	3	663,000	495,900	5	1,105,000	826,500									
Outardes 4	Outardes	4	864,000	632,000	864,000	632,000	—	—	—	—	—	Completion to 8 units scheduled by 1972. L'achèvement de l'ensemble de 8 groupes est prévu 1972 environ.									
Outardes 3	Outardes	4	1,034,000	756,200	1,034,000	756,200	—	—	—	—	—										
Manic 3	Manicouagan	—	—	—	—	—	—	—	6	1,580,000	1,176,000	Planned to be in service in 1976. L'entrée en service est prévue pour 1976.									
Total			1,982,800	1,450,300			663,000	495,900		2,727,400	2,033,550										

THERMAL-ELECTRIC CAPACITY				PUISSANCE THERMO-ÉLECTRIQUE											
DEVELOPMENT AMÉNAGEMENT	TYPE	INSTALLED DURING 1969 INSTALLATION en 1969			TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE				REMARKS REMARQUES				
		No of Units		Puisance totale en kW	PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		IN 1970		AFTER 1970						
		Total Capacity			en kW		POUR 1970		APRÈS 1970						
		KW			en kW		No of Units		Total Capacity			Puisance totale en kW			
HYDRO QUÉBEC		GÈNÈRE		No of Units		en kW		Puisance totale en kW		No of Units		Total Capacity		Puisance totale en kW	
Gentilly	N	—	—	—	—	—	—	—	1	250,000	Scheduled for service in 1971. <i>L'entrée en service doit avoir lieu en 1971.</i>				
Cap-Aux-Meules	IC	—	—	9,000	—	3,000	—	—	—	3,000					
Various Locations	IC	—	—	—	—	1,000	—	—	—	1,000					
Total						4,000		254,000							
Combined Hydro and Thermal Total		1,450,300		499,900		2,287,550									
<i>Puissance totale hydro-électrique et thermo-électrique</i>															

New Brunswick

Nouveau - Brunswick

HYDRO-ELECTRIC CAPACITY										PUISSANCE HYDRO-ÉLECTRIQUE									
DEVELOPMENT AMÉNAGEMENT	RIVER RIVIÈRE	INSTALLED DURING 1969 INSTALLATION en 1969				TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE				REMARKS REMARQUES							
		Turbines en HP Puisance totale des Générateurs en kW		Turbine HP Générateur en kW		Générateurs en HP No of Units		Générateurs en HP No of Units		Générateurs en HP No of Units									
		Total Turbine Capacité HP	No of Units	Total Turbine Capacité HP	No of Units	Total Turbine Capacité HP	No of Units	Total Turbine Capacité HP	No of Units	Total Turbine Capacité HP	No of Units								
NEW BRUNSWICK ELECTRIC POWER COMMISSION																			
Mactaquac	Saint John	—	—	—	420,000	300,000	—	—	—	3	420,000	300,000							
Total											420,000	300,000							
THERMAL-ELECTRIC CAPACITY										PUISSANCE THERMO-ÉLECTRIQUE									
DEVELOPMENT AMÉNAGEMENT	TYPE	INSTALLED DURING 1969 INSTALLATION en 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE				REMARKS REMARQUES									
		Puisance totale en kW		Puisance totale en kW		Puisance totale en kW		Puisance totale en kW											
		No of Units Total Capacity en kW	No of Units Total Capacity en kW	No of Units Total Capacity en kW	No of Units Total Capacity en kW	No of Units Total Capacity en kW	No of Units Total Capacity en kW												
NEW BRUNSWICK ELECTRIC POWER COMMISSION																			
Dalhousie	S	1	100,000	100,000	100,000	—	—	—	—										
Grand Manan	IC	1	890	890	2,793	—	—	—	—										
Total		puissance nouvelle puissance enlevée augmentation nette		100,890 450 100,440	new capacity removed net addition														
Combined Hydro and Thermal Total Puisance totale hydro-électrique et thermo-électrique				100,440															

Plant development may ultimately reach 5,000 kW.
L'expansion de la centrale peut atteindre une puissance de 5,000 kW.

The 890 kW unit replaced two units, one of 200 kW and the other 250 kW for a net increase of 440 kW.
Le groupe de 890 kW a remplacé deux groupes de 200 kW et de 250 kW respectivement, soit une augmentation du total de 440 kW.

THERMAL-ELECTRIC CAPACITY				PUISSANCE THERMO-ÉLECTRIQUE						REMARKS REMARQUES	
DEVELOPMENT AMÉNAGEMENT	TYPE	INSTALLED DURING 1969 INSTALLATION en 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969	PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE			IN 1970	AFTER 1970 APRÈS 1970		
		No of Units en kW	Puissance totale en kW		No of Units en kW	Total Capacity en kW	Puissance totale en kW		No of Units en kW		Total Capacity en kW
NOVA SCOTIA POWER COMMISSION											
Trenton	S 1	150,000	210,000	—	—	—	—	—	—	—	
Point Tupper	S 1	80,000	80,000	—	—	—	—	—	—	—	
NOVA SCOTIA LIGHT AND POWER CO.											
Tuft's Cove	S —	—	100,000	—	—	—	—	1	105,000	105 MW unit planned for service in 1972. L'entrée en service d'un groupe de 105 MW est prévue pour 1972.	
Total		230,000							105,000		

Newfoundland

Terre - Neuve

HYDRO-ELECTRIC CAPACITY				PUISSANCE HYDRO-ÉLECTRIQUE										REMARKS REMARQUES
DEVELOPMENT AMÉNAGEMENT	RIVER RIVIÈRE	INSTALLED DURING 1969 INSTALLATION en 1969			TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE							
							IN 1970					AFTER 1970 APRÈS 1970		
		No of Units en kW	Turbine HP Puissance totale des générateurs en kW	Turbine HP Capacité kW	No of Units en kW	Générateur kW	No of Units en kW	Total Capacity des turbines en HP Puissance totale des générateurs en kW	No of Units en kW	Total Capacity des turbines en HP Puissance totale des générateurs en kW	No of Units en kW	Total Capacity des turbines en HP Puissance totale des générateurs en kW		
CHURCHILL FALLS (LABRADOR) CORPORATION LIMITED		—	—	—	—	—	—	—	11	7,000,000	5,225,000	The "on line" date of 1971 has been set for the first of the eleven units and first power deliveries to Quebec are planned for 1972. <i>La date de 1971 a été fixée pour l'achèvement du premier des onze groupes prévus, et les premières livraisons de puissance au Québec sont prévues pour 1972.</i>		
Churchill Falls	Churchill	—	—	—	—	—	—	—	—	—	—			
NEWFOUNDLAND AND LABRADOR POWER COMMISSION		—	—	—	—	—	—	—	—	—	—			
Bay d'Espoir	Salmon	—	—	400,000	2	306,000	200,000	153,000	—	—	—	5,225,000		
Total							200,000	153,000		7,000,000	5,225,000			

The 'on line' date of 1971 has been set for the first of the eleven units and first power deliveries to Quebec are planned for 1972.
La date de 1971 a été fixée pour l'achèvement du premier des onze groupes prévus, et les premières livraisons de puissance au Québec sont prévues pour 1972.

NEWFOUNDLAND (Continued)

TERRE-NEUVE (Continued)

THERMAL-ELECTRIC CAPACITY					PUISSANCE THERMO-ÉLECTRIQUE								
DEVELOPMENT AMÉNAGEMENT	TYPE		GENRE		INSTALLED DURING 1969 INSTALLATION en 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE			REMARKS REMARQUES	
	No of Units	KW	Puisissance totale en kW	Total Capacity KW	Puisissance totale en kW	No of Units	Total Capacity KW	Puisissance totale en kW	No of Units	Total Capacity KW	Puisissance totale en kW		
NEWFOUNDLAND AND LABRADOR POWER COMMISSION													
Holyrood	S	—	—	—	—	—	1	150,000	1	150,000			
Port aux Basques	IC	1	2,700	4,360									
Total	puissance nouvelle puissance enlevée augmentation nette		2,700	new capacity removed net addition	150,000			150,000					
			880										
			1,820										
Combined Hydro and Thermal Total			1,820				303,000			5,375,000			
Puisseance totale hydro-électrique et thermo-électrique													

Prince Edward Island

Île du Prince - Edouard

THERMAL-ELECTRIC CAPACITY					PUISSANCE THERMO-ÉLECTRIQUE							
DEVELOPMENT AMÉNAGEMENT	TYPE		GENRE		INSTALLED DURING 1969 INSTALLATION en 1969		TOTAL STATION CAPACITY AT END 1969 PUISSANCE TOTALE DE LA STATION A LA FIN DE 1969		PROPOSED FOR INSTALLATION INSTALLATION PROJETÉE			REMARKS REMARQUES
			Total Capacity en kW	Puisance totale en kW	K.W	en kW	No of Units	Nombre de groupes	Total Capacity en kW	No of Units	Total Capacity en kW	
MARITIME ELECTRIC COMPANY LIMITED												
Western P.E.I.	GT	—	—	—	—	—	—	—	—	1	20,000	Installation planned for 1971. <i>L'installation doit être achevée en 1971.</i>
Total											20,000	

**ELECTRIC
POWER
GENERATING
STATIONS**

**CENTRALES
D'ÉNERGIE
ÉLECTRIQUE**

INDEX OF FUELS FOR THERMAL DEVELOPMENTS
INDEX DES COMBUSTIBLES POUR AMÉNAGEMENTS THERMO-ÉLECTRIQUES

Gas	a	Gaz
Oil	b	Mazout
Wood Waste	c	Déchets de bois
Coal	d	Charbon
Coke	e	Coke
Waste Heat	f	Chaleur résiduelle
Coke Oven Gas	g	Gaz de coke
Uranium Dioxide	h	Bioxide d'uranium
Grain Refuse	i	Rebuts de céréales
Flare Gas	j	Gaz naturel

ERRATA

The Aubrey Falls development, No. 7, is incorrectly included in the hydro listing for British Columbia on page 45 and should have appeared as No. 12 in the Ontario listing on page 59. However, the total capacities shown on pages 46 and 63 are correct.

ERRATA

Dans la section des aménagements hydro-électriques pour la Colombie-Britannique, à la page 45, l'aménagement Aubrey Falls (No. 7) y est incorrectement inclus. Il aurait dû apparaître à la page 59 dans la section hydro-électrique de l'Ontario, au numéro 12. Ceci n'affecte pas les totaux indiqués aux pages 46 et 63.

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units No. de groupes	Unit Capacity hp. Capacité de chaque groupe en Hp	Turbines		Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe				Unit Capacity hp. Capacité globale en Hp	Unit Capacity kw. Capacité globale en kw	Unit Capacity hp. Capacité globale en Hp	Unit Capacity kw. Capacité globale en kw
1	Gordon M. Shrum	Peace	BCHPA	1968	1969	500	5	310,000	1,550,000	227,000	1,135,000	
2	Kemano	Nechako to Kemano	ALCAN	1954	1967	2,500	4	150,000		97,600		
							4	150,000	1,200,000	105,600	812,800	
3	Waneta	Pend d'Oreille	CMSC	1954	1966	210	1	130,000		72,000		
							2	120,000		72,000		
							1	130,000	500,000	76,500	292,500	
4	Bridge River No. 2	Bridge River	BCHPA	1959	1960	1,264	4	82,000	328,000	62,000	248,000	
5	Bridge River No. 1	Bridge River	BCHPA	1948	1954	1,261	4	69,000	276,000	45,000	180,000	
6	Cheakamus	Cheakamus	BCHPA	1957	1957	954	2	95,000	190,000	70,000	140,000	
7	Aubrey Falls	Mississaga	HEPCO	1969	1969	173	2	100,000	200,000	75,075	130,150	
8	John Hart	Campbell	BCHPA	1947	1953	390	6	28,000	168,000	20,000	120,000	
9	Brilliant	Kootenay	CMSC	1944	1968	90	3	37,000		27,200		
							1	40,000	151,000	27,200	108,800	
10	Ruskin	Stave	BCHPA	1930	1950	123	3	47,000	141,000	35,200	105,600	
11	Strathcona	Campbell	BCHPA	1958	1968	140	2	42,000	84,000	33,750	67,500	
12	Wahleach	Wahleach Lake to Fraser	BCHPA	1952	-	1,880	1	82,000	82,000	60,000	60,000	
13	Upper Bonnington	Kootenay	CMSC	1907	1940	70	2	8,000		5,062		
							2	9,000		6,750		
							2	26,000	86,000	15,750	55,124	
14	Ladore Falls	Campbell	BCHPA	1956	1957	122	2	35,000	70,000	27,000	54,000	
15	Stave Falls	Stave	BCHPA	1912	1925	110	4	13,000		10,500		
						113	1	15,000	67,000	10,500	52,500	
16	Lake Buntzen No. 1	Lake Buntzen to Burrard Inlet	BCHPA	1951	-	380	1	70,000	70,000	50,000	50,000	
17	South Slocan	Kootenay	CMSC	1928	1929	70	3	25,000	75,000	15,750	47,250	
18	Lower Bonnington	Kootenay	WKPL	1925	1926	70	3	20,000	60,000	15,750	47,250	
19	Seton	Seton Creek	BCHPA	1956	-	147	1	58,500	58,500	42,000	42,000	
20	Corra Linn	Kootenay	CMSC	1932	1932	53	3	19,000	57,000	13,500	40,500	
21	Stillwater	Lois	MBPR	1930	1948	-	2	25,000	50,000	16,200	32,400	
22	Clowhom Falls	Clowhom	BCHPA	1958	-	145	1	40,000	40,000	30,000	30,000	
23	Puntledge	Puntledge	BCHPA	1955	-	340	1	35,000	35,000	27,000	27,000	
24	Lake Buntzen No. 2	Lake Buntzen to Burrard Inlet	BCHPA	1913	1919	380	3	13,500	40,500	8,900	26,700	
25	Jordan River	Jordan	BCHPA	1911	1931	1,010	2	5,430		3,200		
							1	10,125		8,000		
							1	18,000	38,985	12,000	26,400	
26	Ash River	Ash	BCHPA	1959	-	735	1	35,000	35,000	25,200	25,200	
27	La Joie	Bridge	BCHPA	1957	-	176	1	30,000	30,000	22,000	22,000	

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Turbines		Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe			Capacity hp Capacité de chaque groupe en hp	Total Capacity Total en hp	Capacity kw Capacité de chaque groupe en kw	Total Capacity Total en kw
28	Powell River	Powell	MBPR	1911	1926	157 147 147	1 1 2	13,500 3,600 3,000	23,100	12,000 3,750 2,800	21,350
29	Ocean Falls	Link	CZC	1917	1932	143 2	2 2	2,100 6,300	16,800	1,900 4,200	12,200
30	Elko	Elk	BCHPA	1923	1924	190	2	7,500	15,000	4,800	9,600
31	Falls River	Big Falls Creek	BCHPA	1930	1960	248	2	6,000	12,000	4,800	9,600
32	Nelson	Kootenay	CN	1907	1950	60 60 70 70	1 1 1 1	1,670 1,900 3,000 6,750	13,320	750 1,000 2,120 4,800	8,670
33	Alouette	Alouette Lake to Stave Lake	BCHPA	1928	-	125.5	1	12,500	12,500	8,000	8,000
34	Walter Hardman	Cranberry Creek	COR	1960	1965	770	2	5,800	11,600	4,000	8,000
35	Shuswap Falls	Shuswap	BCHPA	1929	1942	72 82	1 1	3,800 4,000	7,800	2,400 2,800	5,200
36	Aberfeldie	Bull	BCHPA	1922	1922	275	2	3,650	7,300	2,500	5,000
37	Beach	Britannia Creek Furry Creek	ACL	1916	1917	1,835 760	1 1	3,750 3,750	7,500	2,000 2,000	4,000
38	Spillimacheen	Spillimacheen	BCHPA	1955	1955	207	2 1	1,200 3,000	5,400	900 2,200	4,000
39	Tennent Creek	Tennent Creek	WM	1966	-	2,050	1	4,500	4,500	3,060	3,060
40	Woodfibre	Woodfibre Creek	RC	1947	-	920	1	3,650	3,650	2,250	2,250
41	Port Alice	Victoria Lake to Neroutsos Inlet	RC	1953	-	425	1	3,200	3,200	2,000	2,000

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

3,200

2,022

Total capacity of turbines connected directly to mechanical equipment

Puissance globale des turbines couplées directement à de l'équipement mécanique

46,210

Total (all plants) Puissance installée de toutes les centrales

5,674,865

3,953,476

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation		Fuel	Combustible Type of Prime Mover	No. of Units Nombre de groupes	Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe				Capacity kw Capacité de chaque groupe en kw	Total Capacity Total en kw
1	Burrard	Vancouver	BCHPA	1962	1968	a,d	S	5	150,000	750,000
2	Port Mann	New Westminster	BCHPA	1959	1959	b	GT	4	25,000	100,000
3	Georgia	Chemainus	BCHPA	1958	1959	b	GT	2 2	19,750 18,000	75,500
4	Powell River	Powell River	MBPR	1948	1967	b,c	S	1 1 1 1 1	1,350 1,200 10,500 1,875 36,000	50,925

Gas Turbine
Internal Combustion
Steam
Combustion TurbineGT
IC
S
CTTurbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Fuel	Combustible Type of Prime Mover	No. of Unit	No. de groupes Unit	Capacity kw.	Generators Générateurs	
				First Unit	Premier groupe Latest Unit	Dernier groupe						Capacité de chaque groupe en kW	Total Capacity en kW
5	Watson Island	Watson Island	CCC	1950	1966	b, c	S	2	1		7,500 34,600		49,600
6	Harmac	Nanaimo	MBPR	1954	1963	b, c	S	1	1		31,500 4,000 1,250		36,750
7	Tide Lake	Tide Lake	GOC					2			15,000		30,000
8	Somass Mill	Port Alberni	MBPR	1963	-	c	S	1			26,000		26,000
9	Dawson Creek	Dawson Creek	BCHPA	1953	1963	a, b	IC	2	6		1,000 3,000		20,000
10	Port Alice	Port Alice	RC	1942	1957	b, c	S	1	2		3,200 3,500 6,000		16,200
11	Ocean Falls	Ocean Falls	CZC	1930	1950	b, c	S	1	1		3,000 2,000 4,000 5,000		14,000
12	New Westminster	New Westminster	CZB	1912	1950	c	S	1	1		5,000 1,500 6,000		12,500
13	Elburne Sawmills	Vancouver	CFP	1960	1960	c	S	2			5,750		11,500
14	Dry Dock	Prince Rupert	BCHPA	1950	1967	b	IC	3	1		799 1,970 2,034 5,000		11,401
15	Mica Creek	Mica	BCHPA	1965	1965	b	IC	1	2		675 1,000 2,500 3,000		11,175
16	Tasu	Tasu	WFM	1967	1967		IC	5			2,210		11,050
17	Chetwynd	Chetwynd	BCHPA	1958	1968	b	IC	2	1		600 800 3,000		11,000
18	Port Hardy	Port Hardy	BCHPA	1959	1969	b	IC	1	2		600 300 1,000 5,000		10,200
19	Youbou	Youbou	BCFP	1929	1967	c	S	1	2		800 750 2,000 5,000		9,300
20	Prince George	Prince George	BCHPA	1957	1963	b	IC	3			3,000		9,000
21	Tahsis	Tahsis	TCL	1956	1960	d	S	1	1		5,000 3,000		8,000
22	Golden	Golden	BCHPA	1968	1969	b	IC GT	2	1		1,500 5,000		8,000
23	McMahon	Taylor	PP	1957	1957	a	S	3			2,500		7,500

Gas Turbine
Internal Combustion
Steam
Combustion Turbine

GT
IC
S
CT

Turbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMENAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Combustible Type of Fuel	Prime Mover Type de moteur	No. Unit	Capacity Capacité de groupes kw.	Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe	Fuel					Capacity Capacité de chaque groupe en kW	Total Capacity Total Capacité en kW
24	Golden	Golden	KHFP	1966	-	d		1	7,500	7,500		
25	Kelowna	Kelowna	SMS	1950	1963	b,c,d	S	1 1 1 1	750 2,000 3,500 1,000	7,250		
26	Woodfibre	Woodfibre	RC	1948	1961	b,c	S	2 1	2,000 3,000	7,000		
27	Smithers	Smithers	BCHPA	1951	1965	b	IC	2 1 2 1	560 760 1,000 3,000	6,880		
28	Port Moody	Port Moody	WCL	1958	1965	d	S	1 1	3,500 3,000	6,500		
29	Port Mellon	Port Mellon	CFP	1928	1947	b	S	1 1 1	500 1,500 3,000	5,000		
30	Cassiar	Cassiar	CAC	1952	1966	b	IC	3 2 1 1 1 1	300 350 450 650 900 1,200	4,800		
31	Vancouver	Vancouver	MBPR	1949	1956	c	S	1 1	750 4,000	4,750		
32	Kimberley (Stand-by)	Kimberley	CMSC	1927	1928	d	S	3	1,500	4,500		
33	Victoria	Victoria	BCFP	1940	1950	c	S	1 1	3,000 1,500	4,500		
34	Giscome	Giscome	ELS	1951	1956	c	S IC	1 1 1	1,500 2,400 300	4,200		
35	Fort Nelson	Fort Nelson	BCHPA	1960	1969	a,b	IC	1 2 1 1 1	1,200 600 261 500 1,000	4,161		
36	Elk Falls	Campbell River	EFC	1964	1965	c	S	1 1	3,225 800	4,055		
37	Hammond	Hammond	BCFP	1928	1929	c	S	2	2,000	4,000		
38	Chemainus	Chemainus	MBPR	1925	1950	c	S	1 1	3,000 750	3,750		
39	Vancouver	Vancouver	BCSRC	1947	1960	a,b	S	3	1,250	3,750		
40	Valemount	Valemount	BCHPA	1962	1969	b	IC	3 1 2	350 500 1,000	3,550		
41	McBride	McBride	BCHPA	1951	1969	a,b	IC	1 4	1,000 600	3,400		
42	Jedway	Jedway	JIOC	-	-	b	IC	3 1	1,000 225	3,225		

Gas Turbine
Internal Combustion
Steam
Combustion Turbine

GT
IC
S
CT

Turbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. Nº	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Combustible Type of Prime Mover	Type de moteur primaire	No. Unit	Capacity Capacité de groupes kw.	Generators Générateurs		
				First Unit Premier groupe	Latest Unit Dernier groupe	Fuel					Capacity de chaque groupe en kw	Total Capacity Total Capacité en kW	
43	Hazelton	Hazelton	BCHPA	1965	1969	b	IC	3	200	3,150			
								3	600				
								1	250				
								1	500				
44	Kitimat	Kitimat	ALCAN	1954	1955	b	IC	3	1,000	3,000			
45	Burns Lake	Burns Lake	BCHPA	1954	1965	b	IC	1	800	2,936			
								4	250				
								1	1,136				
46	Honeymoon Bay	Honeymoon Bay	WFI	1949	1961	b	S	1	1,000	2,760			
								1	1,760				
47	Stewart	Stewart	BCHPA	1965	1969	b	IC	2	500	2,611			
							IC	1	125				
							IC	1	350				
							IC	1	1,136				
48	Celgar Pulp Mill	Celgar Pulp Mill	CCC	1963	-		S	1	2,500	2,500			
49	Masset	Masset	BCHPA	1969	1969	b	IC	1	250	2,450			
							IC	1	500				
							IC	2	600				
50	Mesachie Lake	Mesachie Lake	HLC	1943	1949	c	S	1	1,600	2,350			
								1	750				
51	Tide Camp	Stewart	GM	1965	1967	b	IC	3	500	2,300			
								2	400				
52	Endako	Endako	EM	1964	1964	b	IC	1	1,250	2,250			
								1	1,000				
53	Revelstoke	Revelstoke	COR	1926	1954	b	IC	2	300	2,000			
								1	400				
								1	1,000				
54	Hazelton	Hazelton	HSL	1963	1965	b	IC	1	1,500	1,850			
								1	350				
55	Bella Coola	Bella Coola	BCHPA	1955	1968	b	IC	1	96	1,807			
								1	100				
								1	261				
								1	350				
								2	500				
56	Blue River	Blue River	BCHPA	1961	1969	b	IC	2	200	1,750			
							IC	1	250				
							IC	1	600				
							IC	1	500				
57	Sandspit	Queen Charlotte Islands	BCHPA	1962	1966	b	IC	2	600	1,700			
								1	500				
58	Zeballos Mines	Zeballos Mines	ZIM	1962	1964	b	IC	2	300	1,600			
								1	1,000				
59	Alert Bay	Alert Bay	BCHPA		1969	b	IC	3	250	1,550			
							IC	2	150				
							IC	1	500				
60	Prince George	Prince George	NP	1967	-			1	1,500	1,500			

Total capacity of plants 1,500 kw. and over (not listed above)

8,129

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw.

35,150

Puissance installée globale des moins de 1,500 kW

Total (all plants) Puissance installée de toutes les centrales

1,465,715

Combined Hydro and Thermal Total

Puissance Totale Hydro-Électrique et Thermo-Électrique

5,419,191

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Turbines			Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe			Capacity hp. Capacité de chaque groupe en Hp	Total Capacity hp.	Capacity globale en Hp	Capacity kw. Capacité de chaque groupe en kW	Total Capacity kw. Capacité globale en kW
1	Whitehorse Rapids	Yukon	NCPC	1958	1958	61	2	7,500	26,000	5,695		19,390
2	Mayo River	Mayo	NCPC	1952	1957	110	2	11,000 3,000	6,000	8,000 2,550		5,100

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

Total capacity of turbines connected directly to mechanical equipment

Puissance globale des turbines couplées directement à de l'équipement mécanique

2,140

1,650

Total (all plants) Puissance installée de toutes les centrales

34,140

26,140

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation		Fuel	Combustible Type of Prime Mover	No. of Groups Nombre de groupes	Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe				Capacity kw. Capacité de chaque groupe en kW	Total Capacity kw. Capacité globale en kW
1	Whitehorse	Whitehorse	NCPC	1968	1968	b	IC 1	1	5,150 3,920	9,070

Total capacity of plants 1,500 kw. and over (not listed above)

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

1,800

4,410

Total (all plants) Puissance installée de toutes les centrales

15,280

Combined Hydro and Thermal Total

Puissance Totale Hydro-Électrique et Thermo-Électrique

41,420

Gas Turbine
Internal Combustion
Steam
Combustion Turbine

GT
IC
S
CT

Turbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

Northwest Territories

Territoires du Nord - Ouest

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation			Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Turbines			Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe				Unit Capacity hp. Capacité de chaque groupe en Hp	Total Capacity hp. Capacité globale en Hp	Unit Capacity kw. Capacité de chaque groupe en kw	Total Capacity kw. Capacité globale en kw	
1	Twin Gorges	Taltson	NCPC	1965	-	-	1	25,000	25,000	18,000	18,000		
2	Snare Falls	Snare	NCPC	1960	-	63	1	9,200	9,200	7,000	7,000		
3	Snare Rapids	Snare	NCPC	1948	-	56	1	8,350	8,350	7,000	7,000		
4	Bluefish Lake	Yellowknife	CMSC	1941	-	110	1	4,700	4,700	3,360	3,360		

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

Total capacity of turbines connected directly to mechanical equipment

Puissance globale des turbines couplées directement à de l'équipement mécanique

Total (all plants) Puissance installée de toutes les centrales

47,250

35,360

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Fuel	Combustible Type of Prime Mover	No. of Units Nombre de groupes	Generators Générateurs		
				First Unit Premier groupe	Latest Unit Dernier groupe					Unit Capacity kw. Capacité de chaque groupe en kw	Total Capacity kw. Capacité globale en kw	
1	Inuvik	Inuvik	NCPC	1957	1969	b	IC	2	375			
								1	150			
								1	960			
								2	1,000			
								1	600			
							S	1	600		5,060	
2	Frobisher Bay	Frobisher Bay	NCPC	1963	1969	b	IC	1	1,000			
								1	960			
								1	500			
								1	2,585		5,045	
3	Port Radium	Port Radium	EMR	1936	1953	b	IC	2	150			
								1	864			
								2	650			
								2	400			
								1	175			
								1	200		3,639	
4	Hay River	Hay River	NU	1959	1967	b	IC	2	350			
								1	650			
								3	500		2,850	
5	Fort Smith	Fort Smith	NCPC	1956	1969	b	IC					
								1	960			
							GT	1	1,500		2,460	
6	Tungsten	Tungsten	CTMC	1962	1962	b	IC	3	500		1,500	

Total capacity of plants 1,500 kw. and over (not listed above)

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

13,809

Total (all plants) Puissance installée de toutes les centrales

34,363

Combined Hydro and Thermal Total

Puissance Totale Hydro-Électrique et Thermo-Électrique

69,723

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Turbines			Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe			Unit Capacity Capacité de chaque groupe en Hp	Total Capacity Capacité globale en Hp	Unit Capacity Capacité globale en Hp	Capacity Capacité de chaque groupe en kW	Total Capacity Capacité globale en kW
1	Big Bend	Brazeau	CP	1965	1967	386	1	210,000 250,000	460,000	144,000 161,500	305,500	
2	Spray	Spray Diver- sion	CP	1951	1960	875	2	62,000	124,000	40,400	80,800	
3	Rundle	Spray Diver- sion	CP	1951	1960	318 317	1 1	23,000 40,000	63,000	17,000 29,750	46,750	
4	Ghost	Bow	CP	1929	1954	105 92	2 1	18,000 30,000	66,000	12,750 21,150	46,650	
5	Cascade	Cascade	CP	1942	1957	320	2	23,000	46,000	17,000	34,000	
6	Pumping-Generating Station	Brazeau	CP	1965	-	-	2	12,850	25,700	9,720	19,440	
7	Horseshoe	Bow	CP	1953	1955	72	2 2	4,680 7,500	24,360	3,375 5,625	18,000	
8	Kananaskis	Bow	CP	1913	1951	68 70	2 1	6,000 12,000	24,000	3,400 9,560	16,360	
9	Bearspaw	Bow	CP	1954	-	48	1	20,750	20,750	15,300	15,300	
10	Pocaterra	Kananaskis	CP	1955	-	185	1	18,400	18,400	13,500	13,500	
11	Barrier	Kananaskis	CP	1947	-	135	1	13,500	13,500	9,560	9,560	
12	Interlakes	Kananaskis	CP	1955	-	98	1	6,900	6,900	5,040	5,040	
13	Three Sisters	Spray Diver- sion	CP	1951	-	50	1	3,600	3,600	3,400	3,400	

Total capacity of plants under 1,500 kw.

1,843

1,400

Puissance installée globale des centrales de moins de 1,500 kW

Total capacity of turbines connected directly to mechanical equipment

Puissance globale des turbines couplées directement à de l'équipement mécanique

Total (all plants) Puissance installée de toutes les centrales

898,053

616,200

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation		Fuel	Type of Combustible	Prime Mover Type de moteur primaire	No. of Units Nombre de groupes	Unit Capacity Capacité de chaque groupe en kW	Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe						Total Capacity Capacité globale en kW	Capacity Capacité globale en kW
1	Wabamun	Wabamun	CP	1956	1967	a,d	S	2	66,000 150,000 300,000	582,000		
2	Rosedale	Edmonton	CE	1939	1966	a,b	S	2 3 2	15,000 30,000 75,000	405,000		
3	Battle River	Forestburg	CU	1956	1969	b,d	S	2	33,000 150,000	216,000		

Gas Turbine
Internal Combustion
Steam
Combustion TurbineGT
IC
S
CTTurbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Fuel	Combustible Type of Prime Mover	No. Type de moteur primaire	Unit Nombre de groupes	Generators Générateurs		
				First Unit Premier groupe	Latest Unit Dernier groupe	Capacity Capacité de chaque groupe en kW					Total Capacity Total Capacité en kW		
4	Tar Island	Fort McMurray	GCOS	1966	1967	e	S	2	32,500		65,000		
5	Medicine Hat	Medicine Hat	CMH	1929	1953	a	S	1 1 1	3,000 5,000 30,000		38,000		
6	Lethbridge	Lethbridge	CL	1931	1961	a	S	1 2	3,375 5,000				
7	Rainbow Lake	Rainbow Lake	NJ	1968	-	a	GT	2	10,000		33,375		
8	Hinton	Hinton	NWPP	1956	1957	a,b,c	GT	1	30,000		30,000		
							IC	1 1	1,100 1,000		23,860		
9	Clover Bar	Edmonton	C	1953	1966	a	S	3 1	6,000 4,000		22,000		
10	Simonette	Simonette	CU	1966		j	GT	1	20,000		20,000		
11	Sturgeon	Valleyview	CU	1958	1961	j	GT	1 1	10,000 8,500		18,500		
12	Drumheller	Drumheller	CU	1928	1952	d	S	2 1	7,500 2,500		17,500		
13	Two Hills	Duvernay	WC	1953	1958	a	S	3 1	300 1,200				
							IC	6	500				
							GT	1	8,437		13,537		
14	Fort McMurray	Fort McMurray	CU	1954	1969	b	IC GT	3 1 2 1 1	500 3,000 1,200 2,500 650		10,050		
15	Sentinel	Coleman	CP	1927	1929	d	S	2	5,000		10,000		
16	South Power Plant	Edmonton	DPWA	1959	1963	a	GT	1	2,100				
							S	1 1	5,000 2,200		9,300		
17	Vermilion	Vermilion	CU	1948	1961	a	S	4	2,250		9,000		
18	Taber	Taber	CSF	1950	1967	a,b	S	1 1 1	2,000 1,675 4,300		7,975		
19	Foot Hills Hospital	Calgary		1965	1969		S S IC	2 1 1	1,000 5,000 450		7,450		
20	Fairview	Fairview	NU	1954	1960	a	IC	2	3,000		6,000		
21	Fort Saskatchewan	Fort Saskatchewan	SGM	1954	1959	a	S	2	2,500		5,000		
22	Whitecourt	Whitecourt	PAPC	1958	1964	a	IC	2 5	300 800		4,600		
23	Rimbey	Rimbey	BA	1960	1963	a	S	4	1,000		4,000		

Gas Turbine
Internal Combustion
Steam
Combustion Turbine

GT
IC
S
CT

Turbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Fuel	Combustible Type of Prime Mover	Type de moteur primaire	No. Unit	Capacity Capacité kw.	Generators Générateurs		
				First Unit Premier groupe	Latest Unit Dernier groupe							Capacity de chaque groupe en kW	Total Capacity Total en kW	Capacity Capacité globale en kW
24	Jasper	Jasper	NU	1941	1968		b	IC		1 1 1 2 1	1,200 475 850 500 300		3,825	
25	Glenmore Filter Plant	Calgary	COC	1965	1965			S		2	1,800		3,600	
26	Picture Butte	Picture Butte	CSF	1936	1968		a	S		1 2	1,250 750		2,750	
27	Edmonton	Legislative Bldg.	DPWA	1953	1965		a	S		2 1	800 500		2,100	
28	West Whitecourt	West Whitecourt	PAPC	1968				IC					1,600	
Total capacity of plants 1,500 kw. and over (not listed above)													4,000	
Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)														
Total capacity of plants under 1,500 kw.													17,665	
Puissance installée globale des centrales de moins de 1,500 kW														
Total (all plants) Puissance installée de toutes les centrales													1,593,687	
Combined Hydro and Thermal Total / Puissance Totale Hydro-Électrique et Thermo-Électrique													2,209,887	
			Gas Turbine	GT	Turbine à Gaz									
			Internal Combustion	IC	Combustion Interne									
			Steam	S	Vapeur									
			Combustion Turbine	CT	Turbine à Combustion									

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds		No. of Units Nombre de groupes	Unit Capacity hp. Capacité de chaque groupe en hp.	Total Capacity hp. Capacité globale en Hp	Unit Capacity kw. Capacité de chaque groupe en kw.	Total Capacity kw. Capacité globale en kw.
				First Unit Premier groupe	Latest Unit Dernier groupe							
1	Squaw Rapids	Saskatchewan	SPC	1963	1966	105	6	46,000	53,000	382,000	33,500	278,400
2	Coteau Creek	South Saskat- chewan	SPC	1968	1968		3	84,000	252,000	62,200	186,600	
3	Island Falls	Churchill	CRPC	1930	1959	56	3	16,500	19,000	11,880	18,000	106,740
4	Waterloo Lake	Charlot	EN	1961	-	63	1	10,000	10,000	7,500	7,500	
5	Wellington Lake	Charlot	EN	1939	1960	70	2	3,300	6,600	2,400	4,800	

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

Total capacity of turbines connected directly to mechanical equipment

Puissance globale des turbines couplées directement à de l'équipement mécanique

Total (all plants) Puissance installée de toutes les centrales

776,100

584,040

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation		Fuel	Combustible Type of	Prime Mover Type de moteur	No. of Units Nombre de groupes	Unit Capacity kw. Capacité de chaque groupe en kw.	Total Capacity kw. Capacité globale en kw.
				First Unit Premier groupe	Latest Unit Dernier groupe						
1	Boundary Dam	Estevan	SPC	1959	1960	a	S	2	66,000	150,000	282,000
2	Queen Elizabeth	Saskatoon	SPC	1958	1959	a,b,d	S	1	66,000	75,000	141,000
3	A.L. Cole	Saskatoon	SPC	1929	1957	a,b,d	S	1	10,000	15,000	105,000
4	Regina	Regina	SPC	1925	1960	a,b	S	1	15,000	5,000	20,000
5	Estevan	Estevan	SPC	1929	1957	a,d	S	1	20,000	30,000	93,360
6	Success	Success	SPC	1967	1967	a	GT	1	23,360	5,000	70,000
7	Kindersley	Kindersley	SPC	1955	1958	a	IC	3	11,840	3,000	35,520
8	Moose Jaw	Moose Jaw	SPC	1930	1952	a,b	S	2	10,000	15,000	29,000

Gas Turbine
Internal Combustion
Steam
Combustion TurbineGT
IC
S
CTTurbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner	Year Installed Année de l'installation			Combustible	Type of Prime Mover	No. Unit	Nombre de groupes Unit	Capacity kw.	Generators Générateurs	
				First Unit	Premier groupe Latest Unit	Dernier groupe Fuel						Capacité de chaque groupe en kW	Total Capacity Total Capacité en kW
9	Kalium	Kalium	KC	1964	1964	a	S	2	7,500			15,000	
10	Swift Current	Swift Current	SPC	1954	1957	b	IC	2 4	1,275 3,000			14,550	
11	Eldorado	Eldorado	EN	1952	1956	b	IC	4	2,250			9,000	
12	Flin Flon	Flin Flon (Saskatchewan)	HBMS	1929	1951	b,d	S	1 1	1,000 6,000			7,000	
13	La Ronge	La Ronge	SPC	1953	1960	b	IC	2 2 1 1	50 100 350 1,000			1,650	

Total capacity of plants 1,500 kw. and over (not listed above) 10,000

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw. 3,017

Puissance installée globale des centrales de moins de 1,500 kW

Total (all plants) Puissance installée de toutes les centrales 841,097

Combined Hydro and Thermal Total 1,425,137
Puissance Totale Hydro-Électrique et Thermo-Électrique

Gas Turbine	GT	Turbine à Gaz
Internal Combustion	IC	Combustion Interne
Steam	S	Vapeur
Combustion Turbine	CT	Turbine à Combustion

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

AMENAGEMENTS HYDRO-ELECTRIQUES													
No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds		No. of Units Nombre de groupes		Turbines		Generators Générateurs	
				First Premier groupe	Latest Dernier groupe	Unit Unité	Capacity Capacité de chaque groupe en Hp	Total Total Capacity en Hp	Capacity Capacité globale en Hp	Unit Unité	Capacity Capacité de chaque groupe en kW	Total Total Capacity en kW	Capacity Capacité globale en kW
1	Grand Rapids	Saskatchewan	MH	1965	1968	120	4	150,000	600,000	109,250	437,000		
2	Kelsey	Nelson	MH	1960	1969	50	6	42,000	252,000	33,750	202,500		
3	Seven Sisters	Winnipeg	MH	1931	1952	66	6	33,330	200,000	25,000	150,000		
4	Great Falls	Winnipeg	MH	1923	1928	58	6	31,000	186,000	22,000	132,000		
5	Pine Falls	Winnipeg	MH	1951	1952	37	6	19,000	114,000	13,950	83,700		
6	Slave Falls	Winnipeg	WH	1931	1948	30	8	12,000	96,000	9,000	72,000		
7	Pointe du Bois	Winnipeg	WH	1911	1925	45	5	5,200		3,000			
							3	6,800		4,000			
							3	6,900		5,200			
							3	7,300		5,200			
							2	8,000	105,000	5,200	68,600		
8	McArthur Falls	Winnipeg	MH	1954	1955	23	8	10,000	80,000	7,650	61,200		
9	Laurie River No. 2	Laurie	MH	1958	-	55	1	7,000	7,000	5,400	5,400		
10	Laurie River No. 1	Laurie	MH	1950	1952	55	2	3,500	7,000	2,475	4,950		

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

Total capacity of turbines connected directly to mechanical equipment

Puissance globale des turbines couplées directement à de l'équipement mécanique

Total (all plants) Puissance installée de toutes les centrales

1,647,000

1,217,350

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

AMENAGEMENTS THERMO-ELECTRIQUES																
No. N°	Station Centrale	Location Emplacement	Owner	Year Installed Année de l'installation			Combustible	Type of Prime Mover	No. Unit	Capacity Capacité kw.	Generators Générateurs					
				Propriétaire	Premier groupe	Latest Unit					Dernier groupe	Fuel	Type de moteur primaire	Capacité de chaque groupe en kw	Total Capacity Total Capacity en kw	Capacité globale en kw
1	Brandon	Brandon	MH	1957	1969	d,a,b	S	1	105,000							
							S	4	33,000				237,000			
2	Selkirk	Selkirk	MH	1960	1969	b,d	S	2	66,000							
							GT	4	11,900				179,600			
3	Amy Street	Winnipeg	WH	1924	1954	d	S	2	5,000							
							S	1	15,000							
							S	1	25,000				50,000			
4	The Pas	The Pas	MH	1948	1962	b	IC	1	1,100							
							IC	4	1,000							
							IC	1	750							
							IC	1	400				6,250			

Gas Turbine

GT

Turbine à Gaz

Internal Combustion

IC

Combustion Interne

Steam

S

Vapeur

Combustion Turbine

CT

Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner	Year Installed Année de l'installation			Fuel	Combustible Type of Prime Mover	No. Unit	Capacity kw.	Generators Générateurs	
				Propriétaire First Unit	Premier groupe Latest Unit	Dernier groupe					Capacité de chaque groupe en kW	Capacité globale en kW
5	Fort Churchill	Fort Churchill	MH	1949	1963	b	IC	3 4 3	200 300 1,136		5,208	
6	Fort Garry	Winnipeg	MSC	1940	1953	b	S	1 1	1,500 2,500		4,000	
7	Churchill	Churchill	NHB	1931	1955	b,d,i	S	1 1 1	1,500 600 1,250			
							IC	1 1	200 250		3,800	
8	Thompson	Thompson	INCO		1958	b	IC	2	1,500		3,000	

Total capacity of plants 1,500 kw. and over (not listed above) 10,160

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw. 4,721

Puissance installée globale des centrales de moins de 1,500 kW

Total (all plants) Puissance installée de toutes les centrales 503,739

Combined Hydro and Thermal Total 1,721,089

Puissance Totale Hydro-Électrique et Thermo-Électrique

Gas Turbine	GT	Turbine à Gaz
Internal Combustion	IC	Combustion Interne
Steam	S	Vapeur
Combustion Turbine	CT	Turbine à Combustion

ERRATA

The Aubrey Falls development, No. 7, is incorrectly included in the hydro listing for British Columbia on page 45 and should have appeared as No. 12 in the Ontario listing on page 59. However, the total capacities shown on pages 46 and 63 are correct.

ERRATA

Dans la section des aménagements hydro-électriques pour la Colombie-Britannique, à la page 45, l'aménagement Aubrey Falls (No. 7) y est incorrectement inclus. Il aurait dû apparaître à la page 59 dans la section hydro-électrique de l'Ontario, au numéro 12. Ceci n'affecte pas les totaux indiqués aux pages 46 et 63.

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

AMENAGEMENTS HYDRO-ELECTRIQUES														
No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation			Rated Head Hauteur de chute nominale en pieds			Turbines			Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe			No. of Units Nombre de groupes	Capacity hp. Capacité de chaque groupe en hp	Total Capacity hp.	Capacity globale en hp	Capacity kw. Capacité de chaque groupe en kw	Total Capacity kw. Capacité globale en kw	
1	Sir Adam Beck - Niagara Generating Station No. 1	Niagara	HEPCO	1922	1930	305 294 294 294	5 2 1 2	55,000 58,000 58,000 58,000				36,000 43,200 44,000 46,750		
2	Generating Station No. 2			1954	1958	292	16	105,000	1,680,000	76,475				403,900
3	Pumping-Generating Station			1957	1958	85	6	46,000	276,000	29,450				176,700
4	Robert H. Saunders - St. Lawrence	St. Lawrence	HEPCO	1958	1959	81	16	75,000	1,200,000	57,000				912,000
5	Des Joachims	Ottawa	HEPCO	1950	1951	130	8	62,000	496,000	45,000				360,000
6	Abitibi Canyon	Abitibi	HEPCO	1933	1959	237 2	3 2	66,000 66,000	330,000	41,225 43,200				210,075
7	Otto Holden	Ottawa	HEPCO	1952	1953	77 4	4 4	35,000 33,000	272,000	25,650 25,650				205,200
8	Otter Rapids	Abitibi	HEPCO	1961	1963	107	4	60,000	240,000	43,700				174,800
9	Stewartville	Madawaska	HEPCO	1948	1969	148 2	3 2	28,000 68,000	220,000	20,400 45,900				153,000
10	Barrett Chute	Madawaska	HEPCO	1942	1942	150 2	2 2	28,000 84,000	224,000	20,400 55,800				152,400
11	Mountain Chute	Madawaska	HEPCO	1967	1967	151	2	112,000	224,000	69,750				139,500
12	Harmon	Mattagami	HEPCO	1965	1965	101	2	94,000	188,000	64,600				129,200
13	Pine Portage	Nipigon	HEPCO	1950	1954	105 2	2 2	41,000 45,000	172,000	29,700 34,650				128,700
14	Kipling	Mattagami	HEPCO	1966	1966	102	2	94,000	188,000	62,700				125,400
15	Chenaux	Ottawa	HEPCO	1950	1951	40	8	21,000	168,000	15,300				122,400
16	Little Long	Mattagami	HEPCO	1963	1963	90	2	84,000	168,000	60,800				121,600
17	Decew Falls No. 2	Welland Canal	HEPCO	1943	1947	280	2	75,000	150,000	57,600				115,200
18	Ontario Power	Niagara	HEPCO	1905	1919	- 4 5	3 4 5	11,700 11,700 13,400	148,900	7,500 8,770 8,775				101,455
19	Rankine	Niagara	CNPC	1904	1924	133 2 3 1	5 2 3 1	10,000 12,500 10,750 12,000	119,250	7,500 9,375 9,375 10,300				94,675
20	Toronto Power	Niagara	HEPCO	1906	1915	- 4	7 4	15,000 13,000	157,000	9,000 7,200				91,800
21	Chats Falls	Ottawa	HEPCO	1931	1931	53	4	28,000	112,000	22,325				89,300
22	Caribou Falls	English	HEPCO	1958	1958	58	3	34,000	102,000	25,650				76,950
23	Cameron Falls	Nipigon	HEPCO	1920	1958	72 72 73	2 4 1	12,500 12,500 25,000	100,000	9,540 8,480 19,000				72,000

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds		No. of Units Nombre de groupes		Turbines		Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe	Unit Capacity hp. Capacité de chaque groupe en Hp	Unit Capacity hp. Capacité globale en Hp	Unit Capacity kw. Capacité de chaque groupe en kw	Total Capacity kw. Capacité globale en kw				
24	Manitou Falls	English	HEPCO	1956	1958	54	5	18,500	92,500	14,400	72,000		
25	Alexander	Nipigon	HEPCO	1930	1958	60 58	3 2	18,000 19,000	92,000	12,750 13,500	65,250		
26	Whitedog Falls	Winnipeg	HEPCO	1958	1958	50	3	27,000	81,000	21,600	64,800		
27	Smoky Falls	Mattagami	SFPPC	1928	1931	113	4	18,750	75,000	13,200	52,800		
28	Silver Falls	Kaministikwia	HEPCO	1959	-	330	1	60,000	60,000	45,000	45,000		
29	Geo. W. Rayner	Mississagi	HEPCO	1950	1950	210	2	29,000	58,000	21,150	42,300		
30	Upper Falls	Montreal	GLPC	1937	1957	232	2 1	12,600 31,000	56,200	9,000 22,500	40,500		
31	Aguasabon	Aguasabon	HEPCO	1948	1948	290	2	27,500	55,000	20,250	40,500		
32	Red Rock Falls	Mississagi	HEPCO	1960	1961	93	2	26,500	53,000	20,250	40,500		
33	Island Falls	Abitibi	APPC	1924	1925	63	4	12,000	48,000	9,600	38,400		
34	DeCew Falls No. 1	Welland Canal	HEPCO	1901	1913	-	1 1 2 1 1	6,000 6,000 6,000 6,000 6,000	36,000	4,800 5,000 5,300 5,600 5,900	31,900		
35	Kakabeka Falls	Kaministikwia	HEPCO	1906	1914	178	3 1	7,500 12,500	35,000	5,400 7,970	24,170		
36	High Falls	Michipicoten	GLPC	1930	1950	147	2 1	11,000 13,200	35,200	6,750 9,675	23,175		
37	Big Eddy	Spanish	HCL	1929	1929	90	3	9,400	28,200	7,200	21,600		
38	Sault Ste. Marie	St. Mary	GLPC	1918	1931	18.5	24 3 1	900 2,400 2,200	31,000	650 1,440 1,600	21,520		
39	Iroquois Falls	Abitibi Lake & Black River	APPC	1949	1949	43	1 1 1 6 5	1,800 1,800 2,200 2,200 2,400	31,000	1,200 1,280 1,200 1,280 2,025	21,485		
40	Twin Falls	Abitibi	APPC	1921	1925	57.5	5	6,000	30,000	4,050	20,250		
41	Gartshore	Montreal	GLPC	1958	-	112	1	30,300	30,300	20,000	20,000		
42	Hollingsworth Falls	Michipicoten	GLPC	1959	-	108	1	30,300	30,300	20,000	20,000		
43	Ear Falls	English	HEPCO	1930	1948	36	1 1 2	5,000 5,000 7,500	25,000	4,000 3,825 5,400	18,625		
44	High Falls	Spanish	HCL	1905	1966	85	4 1	4,000 7,500	23,500	3,000 5,550	17,550		
45	Norman	Winnipeg (West Branch)	OMPP	1925	1925	22	5	3,400	17,000	3,300	16,500		

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Unit Capacity Capacité de chaque groupe en hp	Turbines		Generators Générateurs	
				First Premier groupe	Latest Dernier groupe				Total Capacity Capacité globale en Hp	Unit Capacity kw. Capacité de chaque groupe en kw	Total Capacity Capacité globale en kw	
46	Lower Falls	Montreal	GLPC	1938	1942	185	2	10,900	21,800	8,100	16,200	
47	Hogg	Montreal	GLPC	1965	-	77	1	21,750	21,750	15,000	15,000	
48	Espanola	Spanish	KVPC	1906	1946	64	4	1,675		1,250		
						64	1	10,000		7,500		
						64	1	2,350	19,050	1,750	14,250	
49	Scott Falls	Michipicoten	GLPC	1952	1952	70	2	10,000	20,000	6,800	13,600	
50	Fort Frances	Rainy	OMPP	1955	1955	28	8	2,000	16,000	1,600	12,800	
51	Welland Canal	Welland Canal	STLSA	1932	1932	160	3	5,000	15,000	4,000	12,000	
52	Wawaitin	Mattagami	HEPCO	1912	1918	125	2	3,450		2,500		
							2	4,000	14,900	3,375	11,750	
53	Kenora	Winnipeg	OMPP	1923	1924	22	4	1,200		1,000		
							6	1,200	12,000	1,250	11,500	
54	Heely Falls	Trent	HEPCO	1913	1919	73	2	5,600		3,750		
							1	5,600	16,800	3,000	10,500	
55	McPhail Falls	Michipicoten	GLPC	1954	1954	48	2	7,500	15,000	5,000	10,000	
56	Upper Notch	Montreal	HEPCO	1930	1930	48	2	6,500	13,000	4,800	9,600	
57	Calm Lake	Seine	OMPP	1928	1928	82	2	6,400	12,800	4,675	9,350	
58	Sturgeon Falls	Sturgeon	APPC	1902	1964	40.5	1	2,500		1,800		
							1	1,000		1,685		
							1	1,500		1,350		
							1	1,500		1,685		
							1	1,500		1,415		
							1	1,000	9,000	1,415	9,350	
59	Eddy	Ottawa	EBEC	1909	1912	38	2	4,650		3,000		
							1	4,650	13,950	3,300	9,300	
60	Crystal Falls	Sturgeon	HEPCO	1921	1921	33	4	2,600	10,400	2,020	8,080	
61	Ranney Falls	Trent	HEPCO	1922	1926	-	1	1,000		720		
							2	5,000	11,000	3,600	7,920	
62	Chaudière Falls No.4	Ottawa	OHEC	1931	1931	38	2	5,400	10,800	3,960	7,920	
63	Big Eddy	Muskoka	HEPCO	1941	1941	38	2	5,280	10,560	3,825	7,650	
64	Ragged Rapids	Muskoka	HEPCO	1938	1938	38	2	5,200	10,400	3,825	7,650	
65	Sturgeon Falls	Seine	OMPP	1927	1927	64	2	5,000	10,000	3,825	7,650	
66	Matabitchuan	Matabitchuan	HEPCO	1910	1910	305	4	3,300	13,200	1,690	6,760	
67	Swift Rapids	Severn	OWLP	1916	1966	47	1	2,120		1,350		
							2	3,500	9,120	2,700	6,750	
68	Lower Sturgeon	Mattagami	HEPCO	1923	1923	42	2	4,000	8,000	3,200	6,400	
69	Smooth Rock	Mattagami	APPC	1916	1916	45	2	4,500	9,000	3,125	6,250	
70	Eugenia	Beaver	HEPCO	1915	1920	550	2	2,250		1,200		
							1	4,000	8,500	2,400	4,800	

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Turbines			Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe			Unit Capacity hp. Capacité de chaque groupe en Hp	Total Capacity Total Capacity en Hp	Capacity globale en Hp	Unit Capacity kw. Capacité de chaque groupe en kw	Total Capacity Total Capacity en kw
71	Meyersburg	Trent	HEPCO	1924	1924	32	3	2,200	6,600	1,600	4,800	
72	Nairn	Spanish	HCL	1917	1919	30	3	2,600	7,800	1,500	4,500	
73	Chaudière Falls No. 2	Ottawa	OHEC	1909	1936	40	3	2,300	6,900	1,462	4,386	
74	Peterborough	Otonabee	PHPC	1902	1950	27	1 1 1	2,300 2,550 2,140	6,990	1,200 1,500 1,400	4,100	
75	Coniston	Wanapitei	HEPCO	1905	1915	53	1 1 1	1,200 1,600 3,500	6,300	720 1,125 2,250	4,095	
76	Stinson	Wanapitei	HEPCO	1925	1925	-	2	3,500	7,000	2,000	4,000	
77	Calabogie	Madawaska	HEPCO	1917	1917	30	2	3,000	6,000	2,000	4,000	
78	Big Chute	Severn	HEPCO	1911	1919	56	3 1	1,300 2,300	6,200	900 1,280	3,980	
79	South Falls	South Muskoka	HEPCO	1916	1925	107	1 2	1,000 2,200	5,400	635 1,600	3,835	
80	Wabagishik	Vermilion	HCL	1912	1935	70	1 1	2,700 2,700	5,400	1,600 2,140	3,740	
81	Minden	Gull	OWLP	1935	1935	66	2	2,600	5,200	1,800	3,600	
82	Sandy Falls	Mattagami	HEPCO	1911	1916	32 34	2 1	1,200 2,500	4,900	950 1,595	3,495	
83	Hagues Reach	Trent	HEPCO	1925	1925	22.5	3	1,600	4,800	1,120	3,360	
84	Indian Chute	Montreal	HEPCO	1923	1924	45	2	2,250	4,500	1,620	3,240	
85	Sidney	Trent	HEPCO	1911	1911	20	4	1,400	5,600	795	3,180	
86	Seymour	Trent	HEPCO	1909	1911	23	4 1	1,100 1,100	5,500	600 750	3,150	
87	Mathias	Muskoka	OWLP	1950	-	43	1	3,770	3,770	2,812	2,812	
88	Hound Chute	Montreal	HEPCO	1910	1911	-	4	1,335	5,340	700	2,800	
89	Kapuskasing	Kapuskasing	SFPPC	1923	-	30	1	2,500	2,500	2,750	2,750	
90	Frankford	Trent	HEPCO	1913	1913	18	4	1,200	4,800	650	2,600	
91	Jones Falls	Rideau Canal	GELW	1948	1950	65 58 58	1 2 1	250 1,037 1,500	3,824	180 800 800	2,580	
92	Sills Island	Trent	HEPCO	1926	1926	14	1 1	1,000 1,000	2,000	1,275 1,020	2,295	
93	McVittie	Wanapitei	HEPCO	1912	1912	42	2	1,800	3,600	1,125	2,250	
94	Nassau	Otonabee	CGEC	1902	1926	16	1 2	1,600 700	3,000	1,500 360	2,220	
95	High Falls	Mississippi	HEPCO	1920	1920	82	3	1,240	3,720	700	2,100	

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Aménagement	River Rivière	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Unit Capacity Capacité de chaque groupe en Hp	Total Capacity Capacité globale en Hp	Unit Capacity Capacité globale en kW	Generators Générateurs
				First Unit Premier groupe	Latest Unit Dernier groupe						
96	Nipissing	South	HEPCO	1909	1909	-	1	1,250		1,000	
97	Lakefield	Otonabee	HEPCO	1928	-	16	1	3,100	3,100	2,050	2,050
98	Fountain Falls	Montreal	HEPCO	1914	1914	30	2	1,500	3,000	1,000	2,000
99	Rideau Falls	Rideau	DPW	1909	1909	47	2	1,500	3,000	1,000	2,000
100	Crow Bay	Trent Canal	CPUC	1909	1911	-	1	1,470		1,125	
							1	1,000	2,470	850	1,975
101	Auburn	Otonabee	HEPCO	1911	1912	18	3	950	2,850	625	1,875
102	Current River	Current	TBH	1902	1906	80	2	450		350	
							1	1,200	2,100	1,100	1,800
103	Eagle	Eagle	DPC	1928	-	37	1	2,000	2,000	1,760	1,760
104	Trethewey Falls	South Muskoka	HEPCO	1929	-	35	1	2,300	2,300	1,600	1,600

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

Total capacity of turbines connected directly to mechanical equipment

Puissance globale des turbines couplées directement à de l'équipement mécanique

30,086

21,244

27,375

Total (all plants) Puissance installée de toutes les centrales

9,263,805

6,634,032

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation		Fuel	Combustible Type of Prime Mover	No. of Units Nombre de groupes	Unit Capacity Capacité de chaque groupe en kW	Total Capacity Capacité globale en kW	Generators Générateurs
				First Unit Premier groupe	Latest Unit Dernier groupe						
1	Lakeview	Toronto	HEPCO	1961	1966	b,d	S	8	300,000		
							CT	4	7,500		2,430,000
2	Richard L. Hearn	Toronto	HEPCO	1951	1966	d	S	4	100,000		
								4	200,000		
							CT	4	7,500		1,230,000
3	Lambton	Sarnia	HEPCO	1967	1969	d	S	2	1,000,000		1,030,000
4	J. Clark Keith	Windsor	HEPCO	1951	1967	b,d	S	4	66,000		
							CT	1	7,500		271,500
5	Douglas Point	Kincardine	HEPCO	1966	-	h	S	1	200,000		200,000
6	Thunder Bay	Fort William	HEPCO	1963	-	d	S	1	100,000		
							CT	2	14,150		128,300
7	Detweiler	Kitchener	HEPCO	1967	1967	b	CT	4	16,320		65,280

Gas Turbine
Internal Combustion
Steam
Combustion TurbineGT Turbine à Gaz
IC Combustion Interne
S Vapeur
CT Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Fuel	Combustible Type of	Prime Mover Type de moteur	No. Unit	Nombre de groupes Unit Capacity kw.	Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe							Capacité de chaque groupe en kW	Total Capacity Total Capacité en kW
8	A.W. Manby	Toronto	HEPCO	1965	1966	b		CT		4	16,320		65,280
9	Windsor	Windsor	FMCC	1936	1952	d		S		1	10,000		
										1	4,000		
										2	25,000		64,000
10	Sarnia-Scott	Sarnia	HEPCO	1965	1966	b		CT		2	15,000		
										2	16,320		62,640
11	Sarnia	Sarnia	PC	1943	1956	b,d		S		1	10,000		
										1	5,000		
										1	4,000		
										1	13,200		32,280
12	Sault Ste. Marie	Sault Ste. Marie	ASC	1942	1963	a,b,d		S		2	12,500		
										2	625		26,250
13	Fort William	Fort William	GLPAC	1928	-	a,c,d		S		1	4,000		
										1	5,000		
										1	17,100		26,100
14	Kapuskasing	Kapuskasing	SFPPC	1928	1958	a,c,d		S		2	650		
										1	12,500		
										1	9,100		22,900
15	Nuclear Power Demonstration Unit	Rolphton	AECL	1962	-	h		S		1	20,000		20,000
16	Marathon	Marathon	ACC	1946	1948	b,d		S		1	7,500		
										2	4,000		15,500
17	Amherstburg	Amherstburg	ACCL	1938	1957	d		S		1	2,500		
										1	4,700		
										1	3,750		10,950
18	Hamilton	Hamilton	SCC	1948	1959	a,b,g		S		1	4,000		
										1	6,000		10,000
19	Thorold	Thorold	OPC	1937	1937	a,d		S		2	4,000		8,000
20	Dryden	Dryden	DPC	1954	-	a,d		S		1	6,000		6,000
21	Station No. 6	Gananoque	GELW	1959	1967	a		IC		2	1,360		
										1	1,200		
										1	1,250		5,170
22	Walkerville	Walkerville	HWS	1924	1955	d		S		2	1,000		
										1	2,500		
										1	625		5,125
23	Strathcona	Strathcona	SP	1955	1955	d		S		2	1,655		3,310
24	Chatham	Chatham	CDSC	1946	1946	d		S		2	1,500		3,000
25	Fort Frances	Fort Frances	OMPP	1927	-	d		S		1	3,000		3,000

Gas Turbine
Internal Combustion
Steam
Combustion Turbine

GT
IC
S
CT
Turbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

AMENAGEMENTS THERMO-ELECTRIQUES												
No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Combustible Type of Prime Mover	Type de moteur	No. Unit	Nombre de groupes Capacity kw.	Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe	Fuel					Capacity de chaque groupe en kw	Total Capacity Total Capacité en kw
26	Blind River	Blind River	MFLG	1927	1927	c	S	1	750			
27	Toronto	Toronto	CDSC	1959	-	a,b,d	S	1	2,000		2,750	
28	Toronto	Toronto	CCCC	1937	-	b,d	S	1	2,500		2,500	
29	Ottawa	Ottawa	EBEC	1923	-	d	S	1	2,500		2,500	
30	Port Arthur	Port Arthur	APPC	1928	-	a,c,d	S	1	2,500		2,500	
31	New Toronto	New Toronto	GTR	1940	-	b,d	S	1	2,500		2,500	
32	Pembroke	Pembroke	PHEC	1929	1949	b	IC	1 2	933 671		2,275	
33	Orillia	Orillia	OWLP	1947	1948	b	IC	1 1	1,000 1,136		2,136	
34	Cardinal	Cardinal	CSC	1945	1964	b	IC	3 1 1	320 640 500		2,100	
35	Peterborough	Peterborough	CGEC	1930	1949	d	S	1	2,000		2,000	
36	Espanola	Espanola	KVPC	1947	1951	d	S	1	2,000		2,000	

Total capacity of plants 1,500 kw. and over (not listed above)

99,250

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw.

10,500

Puissance installée globale des centrales de moins de 1,500 kW

Total (all plants) Puissance installée de toutes les centrales

5,880,096

Combined Hydro and Thermal Total

Puissance Totale Hydro-Électrique et Thermo-Électrique

12,514,128

Gas Turbine

GT

Turbine à Gaz

Internal Combustion

IC

Combustion Interne

Steam

S

Vapeur

Combustion Turbine

CT

Turbine à Combustion

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Capacity hp. Capacité de chaque groupe	Turbines		Generators Générateurs	
				First Unit Premier groupe	Latest Unit Der nier groupe				Total en Hp	Capacité globale en Hp	Unit Capacity kw. Capacité de chaque groupe en kw	Total Capacity kw. Capacité globale en kw
1	Beauharnois: Section 1	St. Lawrence Saint-Laurent	HQ	1932	1948	80	8	53,000		37,300		
	Section 2			1950	1953	80	6	53,000		40,000		
	Section 3			1959	1961	80	3	55,000		40,000		
2	Manic 2	Manicouagan	HQ	1965	1967	230	3	56,000		41,120		
3	Bersimis I	Betsiamites	HQ	1956	1959	785	6	56,000		40,000		
4	Outardes	Outardes	HQ	1969	1969		10	73,700	2,148,000	55,250	1,574,260	
5	Chute des Passes	Péribonka	ALCAN	1959	1960	540	8	170,000	1,360,000	126,900	1,015,200	
6	Shipshaw	Saguenay	ALCAN	1942	1943	208	4	258,500	1,034,000	189,050	756,200	
							5	200,000	1,000,000	148,500	742,500	
							2	95,000		58,500		
							6	103,000		60,000		
							2	101,000		60,000		
							2	95,000	1,200,000	60,000	717,000	
7	Bersimis II	Betsiamites	HQ	1959	1960	380	5	180,000	900,000	131,000	655,000	
8	Carillon	Ottawa Outaouais	HQ	1962	1964	61	14	60,000	840,000	46,750	654,500	
9	Outardes	Outardes	HQ	1969	1969		4	216,000	864,000	158,000	632,000	
10	Isle Maligne	Saguenay	SAPC	1925	1937	110	12	45,000	540,000	28,000	336,000	
11	McCormick Dam	Manicouagan	MP	1951	1965	124	2	56,200		35,625		
							3	60,000		40,000		
							2	80,000	452,400	56,250	303,750	
12	Trenche	Saint-Maurice	HQ	1950	1955	160	6	65,000	390,000	47,700	286,200	
13	Beaumont	Saint-Maurice	HQ	1958	1959	124	6	55,000	330,000	40,500	243,000	
14	La Tuque	Saint-Maurice	HQ	1940	1955	114	5	44,500		36,000		
							1	49,000	271,500	36,000	216,000	
15	Paugan	Gatineau	HQ	1928	1956	133	1	47,000		32,400		
						132	7	34,000	285,000	24,225	201,975	
16	Chute-à-la-Savane	Péribonka	ALCAN	1953	1953	110	5	57,000	285,000	37,450	187,250	
17	Chute-du-Diable	Péribonka	ALCAN	1952	1952	110	5	55,000	275,000	37,450	187,250	
18	Manic 1	Manicouagan	HQ	1966	1967	120	3	80,000	240,000	61,470	184,410	
19	Rapide Blanc	Saint-Maurice	HQ	1934	1955	108	1	44,500		30,600		
							5	40,000	244,500	30,600	183,600	
20	Chute à Caron	Saguenay	ALCAN	1931	1934	160	4	75,000	300,000	45,000	180,000	
21	Shawinigan No. 2	Saint-Maurice	HQ	1911	1929	145	3	43,000		30,000		
							3	18,500		15,000		
							2	18,500	221,500	14,000	163,000	
22	Les Cèdres	St. Lawrence Saint-Laurent	HQ	1914	1924	35	18	12,650	227,700	9,000	162,000	
23	Shawinigan No. 3	Saint-Maurice	HQ	1948	1949	145	3	65,000	195,000	50,000	150,000	
24	Grand'Mère	Saint-Maurice	HQ	1915	1930	80	5	22,000		15,725		
							1	22,000		18,000		
							1	24,500		20,000		
						84	2	22,000	200,500	15,725	148,075	

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Unit Capacity Capacité hp. de chaque groupe en Hp	Turbines		Generators Générateurs	
				First Premier groupe	Latest Unit Der nier groupe				Total Capacity Capacité globale en Hp	Unit Capacity Capacité globale en Hp	Total Capacity Capacité globale en kw	Unit Capacity Capacité globale en kw
25	Chelsea	Gatineau	HQ	1927	1939	100	5	34,000	170,000	28,800	144,000	
26	La Gabelle	Saint-Maurice	HQ	1924	1931	60	3	36,000		24,750		
							2	32,000	172,000	24,750	123,750	
27	Rapide-des-Iles	[Ottawa (Upper) — Outaouais (supérieure)]	HQ	1966	1967	86	3	50,000	150,000	36,630	109,890	
28	Farmers Rapids	Gatineau	HQ	1927	1947	66	3	24,000		20,000		
							2	24,000	120,000	19,125	98,250	
29	Masson	Lièvre	MQPC	1933	1933	185	4	34,000	136,000	23,800	95,200	
30	Première Chutes	[Ottawa (Upper) — Outaouais (supérieure)]	HQ	1968	1969		3	42,400	127,200	31,050	93,150	
31	Rapides-des-Quinze	[Ottawa (Upper) — Outaouais (supérieure)]	HQ	1923	1955	90	2	10,000		8,000		
							2	10,000		10,800		
							2	34,500	109,000	26,000	89,600	
32	Chat Falls	[Ottawa — Outaouais]	OVPC	1932	1932	53	4	29,940	119,760	22,325	89,300	
33	High Falls	Lièvre	MQPC	1930	1936	180	1	32,500		21,250		
							3	30,000	122,500	21,250	85,000	
34	Rapid VII	[Ottawa (Upper) — Outaouais (supérieure)]	HQ	1941	1949	68	4	16,000	64,000	14,250	57,000	
35	Bryson	[Ottawa — Outaouais]	HQ	1925	1949	60	2	25,700		18,000		
							1	27,000	78,400	20,000	56,000	
36	Murdock Willson	Shipshaw	PCL	1957	-	263	1	82,000	82,000	51,000	51,000	
37	Jim Gray	Shipshaw	PCL	1953	1953	338	2	35,000	70,000	25,500	51,000	
38	Chutes-aux-Outardes	Outardes	QNSPC	1937	1937	208	2	36,300	72,600	25,000	50,000	
39	Chutes Fifty Foot	Hart Jaune	HJP	1960	1960	123	3	22,000	66,000	16,150	48,450	
40	Rapid II	[Ottawa (Upper) — Outaouais (supérieure)]	HQ	1954	1964	67	4	16,000	64,000	12,000	48,000	
41	Iles Montréal	Des-Prairies	HQ	1929	1930	26	3	8,800		7,500		
							3	12,000	62,400	7,500	45,000	
42	Chutes Dufferin	Lièvre	JMC	1958	1959	62	2	25,000	50,000	19,125	38,250	
43	Chicoutimi	Chicoutimi	SMPC	1957	-	273	1	42,000	42,000	32,000	32,000	
44	Chutes Hemming	Saint-François	HQ	1925	1925	48	6	5,600	33,600	4,800	28,800	
45	Hull 2	[Ottawa — Outaouais]	HQ	1920	1968	32	3	7,500		5,760		
							1	13,400	35,900	10,000	27,280	
46	Sept Chutes	St. Anne (de Beaupré)	HQ	1916	1916	410	4	6,000	24,000	4,680	18,720	
47	St. Marguerite	Marguerite	GPC	1954	1954	100	2	12,000	24,000	8,800	17,600	
48	Kipawa	Gordon Creek	HQ	1920	1926	200	2	3,600		2,800		
							1	8,500		5,760		
							1	9,350	25,050	5,760	17,120	
49	St. Narcisse	Batiscan	HQ	1926	1926	147	2	11,100	22,200	7,500	15,000	
50	Drummondville	Saint François	HQ	1910	1925	27	2	3,200		2,500		
							2	6,000	18,400	4,800	14,600	

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Unit Capacity hp. Capacité de chaque groupe en Hp	Turbines		Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe				Unit Capacity hp. Capacité globale en Hp	Unit Capacity kw. Capacité globale en kW	Total Capacity de chaque groupe en kW	Total Capacity Capacité globale en kW
51	Chutes aux Galets	Shipshaw	PCL	1921	1921	101	2	8,820	17,640	6,800	13,600	
52	Chutes Chaudière	Ottawa Outaouais	EBEC	1913	1955	38	3	5,500	16,500	3,750	11,250	
53	Chicoutimi	Chicoutimi	PCL	1923	-	72	1	11,000	11,000	9,900	9,900	
54	W.R. Beatty	Black	PELC	1917	1951	129	1 1 1 2	1,800 2,250 2,500 3,000	12,550	1,250 1,530 1,800 2,250	9,080	
55	Buckingham	Lièvre	ERC	1914	1939	30	1 1 3	2,000 2,500 2,000	10,500	1,375 1,836 1,440	7,531	
56	Price	Mitis	HQ	1922	1929	120	1 1	3,700 5,900	9,600	2,400 4,000	6,400	
57	Adam Cunningham	Shipshaw	PCL	1953	-	56	1	9,500	9,500	6,375	6,375	
58	Port-Arnaud	Chicoutimi	HQ	1912	1917	56	1 2	2,500 2,500	7,500	1,700 1,875	5,450	
59	Bell Falls	Rouge	HQ	1915	1920	54	3	2,400	7,200	1,600	4,800	
60	Kénogami	Au Sable	PCL	1912	1912	264	2	3,350	6,700	2,345	4,690	
61	Grand Mitis No. 2	Mitis	HQ	1947	-	75	1	6,000	6,000	4,250	4,250	
62	Jonquière No. 1	Au Sable	MJ	1907	1924	42 47	1 1	1,800 4,030	5,830	1,280 2,812	4,092	
63	Westbury	Saint-François	VS	1928	1928	28	2	2,900	5,800	2,000	4,000	
64	Chaudière	Chaudière	HQ	1903	1904	114	2 1	1,400 2,000	4,800	1,000 1,500	3,500	
65	Lachute Mills	Nord (du)	AL	1929	1929	36	3	1,500	4,500	1,080	3,240	
66	Windsor Mills	Saint-François	DPP	1936	1939	19	2 1 1	1,500 800 430	4,230	1,120 600 320	3,160	
67	Weedon	Saint-François	VS	1920	1926	30 29	2 1	1,700 1,700	5,100	1,040 1,040	3,120	
68	St. Alban	Ste. Anne de la Pêrade	HQ	1927	-	64	1	4,000	4,000	3,000	3,000	
69	Ogilvie Flour Mills	Canal Lachine	OFM	1940	1948	23 15	2 2	1,600 400	4,000	1,200 300	3,000	
70	St. Raphael	Sud (du)	HQ	1921	1921	232	3	1,500	4,500	850	2,550	
71	Domtar	Jacques Cartier	DPP	1960	1962	60	2	1,200	2,400	1,200	2,400	
72	MacDougall	Jacques Cartier	DPP	1925	1927	55	2	1,900	3,800	1,200	2,400	
73	Jonquière	Au sable	PCL	1916	1916	67	1 1	1,800 1,625	3,425	1,200 1,200	2,400	
74	Winneway	Winneway (Outaouais supérieure)	LMC	1938	1943	54	2	1,400	2,800	1,169	2,338	
75	Mont Laurier	Lièvre	HQ	1937	1951	22	1 2	500 1,325	3,150	500 900	2,300	
76	Sherbrooke	Magog	HQ	1910	1910	55	3	1,333	4,000	752	2,256	
77	Garneau	Chicoutimi	HQ	1925	-	33	1	3,450	3,450	2,240	2,240	

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation			Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Turbines			Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe				Unit Capacity hp. Capacité de chaque groupe en hp.	Total Capacity hp. Total Capacity en hp.	Unit Capacity globale en hp. Capacité globale en hp.	Unit Capacity kw. Capacité de chaque groupe en kw.	Total Capacity kw. Total Capacity globale en kw.
78	Magog	Magog	DTC	1920	1920	25	2	1,500	3,000		1,000	2,000	
79	Corbeau	Gatineau	HQ	1926	1926	16	2	1,250	2,500		1,000	2,000	
80	Bird's	Jacques Cartier	DPP	1937	-	27	1	2,250	2,250		1,920	1,920	
81	Rock Forest	Magog	VS	1911	1911	30	2	1,500	3,000		940	1,880	
82	Rivière-du-Loup	Du Loup	VRL	1929	1942	100	1	960			640		
							1	1,900	2,860		1,200	1,840	
83	East Angus Mill	Saint François	DPP	1910	1910	33	1	1,090			846		
						33	1	1,090			990		
						20	1	252	2,432		-	1,836	
84	Magpie	Magpie	HQ	1961	1961	31	2	1,500	3,000		900	1,800	
85	Rawdon	Ouareau	HQ	1928	-	46	1	2,300	2,300		1,720	1,720	
86	Frontenac	Magog	VS	1917	1917	38	2	1,450	2,900		800	1,600	
87	Chutes Burroughs	Nigger	HQ	1929	-	180	1	2,000	2,000		1,600	1,600	

Total capacity of plants under 1,500 kw.

25,360

16,548

Puissance installée globale des centrales de moins de 1,500 kW.

Total capacity of turbines connected directly to mechanical equipment

59,365

Puissance globale des turbines couplées directement à de l'équipement mécanique

Total (all plants) Puissance installée de toutes les centrales

17,356,552

12,499,196

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Combustible Type of Fuel	Prime Mover Type de moteur	No. of Units Nombre de groupes	Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe	Fuel				Unit Capacity kw. Capacité de chaque groupe en kw.	Total Capacity kw. Total Capacity globale en kw.
1	Tracy	Tracy	HQ	1964	1968	b	S	4	150,000		600,000
2	Les Boules	Les Boules	HQ	1955	1960	b	GT	6	6,000		36,000
3	Kenogami Mill	Kénogami	PCL	1967	-	b	S	1	14,750		14,750
4	Chandler	Chandler	GPP	1930	1954	b	S	1	6,000		
								1	2,500		
								1	4,000		12,500
5	Noranda	Noranda	NM	1934	1957	f	S	1	2,600		
								1	3,000		
								1	4,500		10,100
6	Cap aux Meules	Iles-de-la-Madeleine	HQ	1953	1964	b	IC	1	1,065		
								3	1,000		
								1	1,200		
								2	2,200		9,665
7	Drummondville	Drummondville	CCL	1935	1953	b,d	S	1	1,500		
								1	2,500		
								1	3,500		
								1	2,000		9,500

Gas Turbine
Internal Combustion
Steam
Combustion TurbineGT
IC
S
CT
Turbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Fuel	Combustible Type of	Prime Mover Type de moteur	No. Unit	Nombre de groupes Unit	Generators Générateurs		
				First Unit Premier groupe	Latest Unit Dernier groupe	Capacity de chaque groupe en kW						Total Capacity en kW	Capacité globale en kW	
8	Murdochville	Murdochville	GCM	1952	1955	b, f	S	1	5,400					
							IC	2	1,000					
9	Thurso	Thurso	TPPC	1957	-	b, c, d	S	1	7,500				7,700	
													7,500	
10	Ville de Québec	Ville de Québec	ACPP	1927	-	b	S	1	6,000				6,000	
11	Magog	Magog	DTC	1938	1948	d	S	2	2,000				4,000	
12	Montréal	Montréal	CDSC	1925	1947	a, b	S	2	1,000					
								1	1,500				3,500	
13	Gatineau	Gatineau	CIPC	1927	1960	b, c	S	4	750				3,000	
14	Schefferville	Schefferville	IOCC	1956	1956	b	IC	3	1,000				3,000	
15	Trois Rivières	Trois Rivières	CIPC	1922	1925	b, c	S	6	500				3,000	
16	Havre St. Pierre	Havre St. Pierre	REC	1950	1963	b	IC	1	1,000					
								1	500					
								3	300				2,400	
17	Port et terminus (de réserve)	Port Cartier	QCMC	1960	1960	b	IC	2	1,000				2,000	
18	Lac Jeannine (de réserve)	Gagnon	QCMC	1960	1960	b	IC	2	1,000				2,000	
19	Havre St. Pierre	Havre St. Pierre	HQ	1967	-	b	IC	2	1,000				2,000	
20	Desmaraisville	Desmaraisville	CM	1960	1964			13						
								1	136					
									152				1,920	
21	Rivière-du-Loup	Rivière-du-Loup	VRL	1947	1953	b	IC	2	240					
								1	1,360				1,840	
22	Blanc Sablon	Blanc Sablon	HQ	1965	1967	b	IC	2	600					
								1	350				1,550	

Total capacity of plants 1,500 kw. and over (not listed above)

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

7,250

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

13,425

Total (all plants) Puissance installée de toutes les centrales

764,600

Combined Hydro and Thermal Total

Puissance Totale Hydro-Électrique et Thermo-Électrique

13,263,796

Gas Turbine	GT	Turbine à Gaz
Internal Combustion	IC	Combustion Interne
Steam	S	Vapeur
Combustion Turbine	CT	Turbine à Combustion

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Unit Capacity hp. Capacité de chaque groupe en Hp	Total Capacity hp. Total Capacité en Hp	Turbines		Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe					Unit Capacity Capacité globale en Hp	Unit Capacity kw. Capacité de chaque groupe en kW	Total Capacity Total Capacité en kW	Unit Capacity Capacité globale en kW
1	Mactaquac	Saint John	NBEPC	1968	1968		3	140,000	420,000	100,000		300,000	
2	Beechwood	Saint John	NBEPC	1957	1962	57	2	45,000 55,000	145,000	36,000 40,500		112,500	
3	Grand Falls	Saint John	NBEPC	1928	1931	125	4	20,000	80,000	15,750		63,000	
4	Tinker	Aroostook	MNBP	1906	1965	85	2 2 1	2,000 5,000 33,000	47,000	1,500 3,520 20,800		30,840	
5	Tobique	Tobique	NBEPC	1953	1953	75	2	13,500	27,000	10,000		20,000	
6	Great Falls	Nepisiguit	CB	1921	1930	108 110	2 1	5,000 5,500	15,500	3,600 3,600		10,800	
7	Sisson	Tobique	NBEPC	1965	1965	135	1	12,500	12,500	10,000		10,000	
8	Musquash	Musquash	NBEPC	1920	1920	99.5 124.5	2 1	3,670 3,760	11,100	2,320 2,320		6,960	
9	Milltown	St. Croix	NBEPC	1911	1967	21 25 30	3 1 1 1 1	1,080 500 468 500 900	5,608	770 376 350 400 700		4,136	
10	Edmundston	Madawaska	FC	1918	1918	21.1	2	1,000	2,000	1,000		2,000	

Total capacity of plants under 1,500 kw.

3,025.

2,500

Puissance installée globale des centrales de moins de 1,500 kW

Total capacity of turbines connected directly to mechanical equipment

5,000

Puissance globale des turbines couplées directement à de l'équipement mécanique

Total (all plants) Puissance installée de toutes les centrales

773,733

562,736

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation		Fuel	Combustible Type of Prime Mover	No. of Units Nombre de groupes	Unit Capacity Capacité de chaque groupe en kW	Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe					Total Capacity Total Capacité en kW	Unit Capacity Capacité globale en kW
1	Courtenay Bay	East Saint John	NBEPC	1961	1967	b	S	1	50,000		
								1	13,365		
								2	110,000		283,365
	Dalhousie	Dalhousie	NBEPC	1969		b	S	1	100,000		100,000
2	Grand Lake No. 2	Newcastle Creek	NBEPC	1951	1963	d	S	2	5,000		
								1	15,000		
								1	60,000		85,000
3	Chatham	Chatham	NBEPC	1948	1956	b,d	S	1	12,500		
								1	20,000		32,500
4	Lancaster	Lancaster	IPP	1947	1960	b	S	1	2,000		
								1	10,000		
								1	12,500		24,500
5	Bathurst	Bathurst	CB	1937	1958	b,d	S	1	6,000		
								1	7,600		
								1	7,000		20,600

Gas Turbine
Internal Combustion
Steam
Combustion Turbine

GT
IC
S
CT

Turbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Combustible Type of	Prime Mover Type de moteur	No. Unit	Capacity Capacité kw.	Generators Générateurs		
				First Unit Premier groupe	Latest Unit Dernier groupe	Fuel					Capacité de chaque groupe en kW	Total Capacity Total Capacité en kW	Capacité globale en kW
6	Edmundston	Edmundston	FC	1949	1958	c,d	S	1	1	3,000			
								1	1	3,800			
								1	1	12,500			19,300
7	Dalhousie	Dalhousie	NBIPC	1929	1937	d	S	1	1	6,000			
								1	1	8,000			
								2	2	800			
								2	2	750			17,100
8	Dock Street	Saint John	NBEPIC	1929	1947	b,d	S	1	1	6,000			
								1	1	10,000			16,000
9	Newcastle	Newcastle	FC	-	1967	b	S	1	1	15,625			15,625
10	Grand Lake No. 1	Newcastle Creek	NBEPIC	1931	1944	d	S	1	1	6,250			
								1	1	7,500			13,750
11	Atholville	Atholville	FC	1929	1956	b	S	3	1	1,000			
								1	1	2,000			
								1	1	5,000			10,000
12	Saint John	Saint John	ASR	1954	1962	b	S	1	1	2,500			
								1	1	1,000			3,500
13	Edmundston	Edmundston	ME	1947	1955	b	IC	2	1	690			
								1	1	1,876			3,256
14	Grand Manan	Grand Manan	NBEPIC	1957	1969	b	IC	1	1	890			
								2	1	700			
								1	1	503			2,793
15	Campbellton	Campbellton	CC	1946	1953	b	IC	1	1	240			
								1	1	1,136			
								1	1	1,360			2,736

Total capacity of plants 1,500 kw. and over (not listed above)

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

2,000

Total (all plants) Puissance installée de toutes les centrales

652,025

Combined Hydro and Thermal Total

Puissance Totale Hydro-Électrique et Thermo-Électrique

1,214,761

Gas Turbine
Internal Combustion
Steam
Combustion Turbine

GT
IC
S
CT

Turbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Unit Capacity hp. Capacité de chaque groupe en Hp	Total Capacity Total Capacity en hp.	Turbines		Generators Générateurs	
				First Unit Premier groupe	Latest Unit Dernier groupe					Unit Capacity globale en Hp	Capacity kw. Capacité de chaque groupe en kw.	Total Capacity Total Capacity en kw.	Capacity globale en kw
1	Weymouth Falls	Sissiboo	NSPC	1960	1967	122	2	12,000	24,000	9,000	18,000		
2	Lequille	Allain	NSLPC	1968	-	388	1	15,000	15,000	11,200	11,200		
3	Deep Brook	Mersey	NSPC	1950	1950	46	2	6,400	12,800	4,500	9,000		
4	Big Falls	Mersey	NSPC	1929	1929	58	2	6,350	12,700	4,500	9,000		
5	Lower Lake Falls	Mersey	NSPC	1929	1929	48.5	2	5,300	10,600	3,690	7,380		
6	Cowie Falls	Mersey	NSPC	1937	1937	43	2	5,100	10,200	3,600	7,200		
7	Ruth Falls	East, Sheet Harbour	NSPC	1927	1936	110 109	2 1	3,145 4,300	10,590	2,000 2,970	6,970		
8	Hell's Gate	Black	NSLPC	1930	1949	185	1 1	4,500 4,500	9,000	3,360 3,570	6,930		
9	Nictaux	Nictaux	NSLPC	1954	-	382	1	9,000	9,000	6,800	6,800		
10	Gulch	Bear	NSPC	1956	-	225	1	8,500	8,500	6,000	6,000		
11	Sissiboo Falls	Sissiboo	NSPC	1960	-	87	1	8,000	8,000	6,000	6,000		
12	Upper Lake Falls	Mersey	NSPC	1929	1929	31.5	2	2,350	4,700	2,700	5,400		
13	Hollow Bridge	Black	NSLPC	1940	-	148	1	7,500	7,500	5,312	5,312		
14	Tidewater	North East	NSPC	1921	1921	91.5	2	3,450	6,900	2,320	4,640		
15	Lower Great Brook	Mersey	NSPC	1955	1955	22	2	3,120	6,240	2,250	4,500		
16	Ridge	Bear	NSPC	1957	-	140	1	5,300	5,300	4,000	4,000		
17	Dickie Brook	Dickie Brook	NSPC	1948	1948	298	1 1	1,750 1,750	3,500	1,200 2,600	3,800		
18	Avon No. 1	Avon	NSLPC	1958	-	117.5	1	5,000	5,000	3,750	3,750		
19	Malay Falls	East, Sheet Harbour	NSPC	1924	1954	43 41	2 1	1,850 1,740	5,440	1,200 1,200	3,600		
20	Paradise	Paradise Brook	NSLPC	1950	-	465	1	5,000	5,000	3,600	3,600		
21	Methals	Methals Brook	NSLPC	1949	-	45	1	4,600	4,600	3,400	3,400		
22	Sandy Lake	North East	NSPC	1927	1927	118	2	2,500	5,000	1,600	3,200		
23	White Rock	Gasperaux	NSLPC	1952	-	58	1	4,000	4,000	3,200	3,200		
24	St. Croix	St. Croix	MBPP	1934	-	148	1	4,200	4,200	3,000	3,000		
25	Avon No. 2	Avon	NSLPC	1929	-	142	1	3,900	3,900	3,000	3,000		
26	Lumsden	Black	NSLPC	1942	-	72	1	4,500	4,500	2,800	2,800		
27	Mill Lake	North East	NSPC	1921	1921	162.5	2	1,900	3,800	1,280	2,560		
28	Tusket	Tusket	NSPC	1929	1929	18	3	940	2,820	720	2,160		
29	Salmon Hole	St. Croix	MBPP	1938	-	75	1	2,500	2,500	2,000	2,000		

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kw

Total capacity of turbines connected directly to mechanical equipment

Puissance globale des turbines couplées directement à de l'équipement mécanique

6,365

4,358

Total (all plants) Puissance installée de toutes les centrales

221,655

162,760

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Fuel	Combustible Type of	Prime Mover Type de moteur	No. Unit	Capacity Capacité kw	Generators Générateurs		
				First Unit Premier groupe	Latest Unit Dernier groupe	Total Capacity Total Capacity en kW						Capacité de chaque groupe en kW	Capacité globale en kW	
1	Trenton	Trenton	NSPC	1951	1969	d	S	S	1 2 2	150,000 10,000 20,000		210,000		
2	Lower Water Street	Halifax	NSLPC	1944	1959	b,d	S		1 2 1 2	10,000 20,000 25,000 45,000		165,000		
3	Glace Bay	Glace Bay	NSPC	1932	1966	d	S		2 4 1	6,000 15,000 36,000		108,000		
4	Tufts Cove	Tufts Cove	NSLPC	1965	-	b,d	S		1	100,000		100,000		
5	Point Tupper	Port Hawkesbury	NSPC	1969		b	S		1	80,000		80,000		
6	Sydney	Sydney	DOSCO	1919	1943	a b d	S		1 2 1 1	7,600 3,000 5,000 16,000		34,600		
7	Harrison Lake	Maccan	NSPC	1926	1949	d	S		1 1 1 1	15,000 6,000 1,500 4,000		26,500		
8	Abercrombie Point	Abercrombie Point	SMP	1967	-				1	18,750		18,750		
9	Port Hawkesbury	Point Tupper	NSP	1962	-	d	S		1	10,000		10,000		
10	Brooklyn	Brooklyn	BMPC	1943	-	b,c	S		1	5,170		5,170		
11	Dartmouth	Dartmouth	IOC	1965	-	b	S		1	3,750		3,750		
12	King Street	Yarmouth	NSLPC	1937	1948	b	IC		1 1 2	320 400 600		1,920		

Total capacity of plants 1,500 kw. and over (not listed above)

5,200

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw.

2,070

Puissance installée globale des centrales de moins de 1,500 kW

Total (all plants) Puissance installée de toutes les centrales

770,960

Combined Hydro and Thermal Total

933,720

Puissance Totale Hydro-Électrique et Thermo-Électrique

Gas Turbine
Internal Combustion
Steam
Combustion Turbine

GT
IC
S
CT

Turbine à Gaz
Combustion Interne
Vapeur
Turbine à Combustion

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

			AMÉNAGEMENTS THERMO-ELECTRIQUES										
No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation			Combustible Type of Prime Mover	Type de moteur primaire	No. Unit	Nombre de groupes Capacité kw.	Generators Générateurs		
				First Unit Premier groupe	Latest Unit Dernier groupe	Fuel					Capacité de chaque groupe en kW	Total Capacity Total Capacité en kW	Capacité globale Capacité globale en kW
1	Charlottetown	Charlottetown	MEC	1931	1963	b	S	1	1,500	70,500			
								1	4,000				
								2	7,500				
								1	10,000				
								2	20,000				
2	Summerside	Summerside	MS	1940	1963	b	IC	1	200	6,890			
								2	250				
								1	555				
								1	1,135				
								2	2,250				

Total capacity of plants 1,500 kw. and over (not listed above)

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw.

Puissance installée globale des centrales de moins de 1,500 kW

Total (all plants) Puissance installée de toutes les centrales

77,390

Gas Turbine

GT

Turbine à Gaz

Internal Combustion

IC

Combustion Interne

Steam

S

Vapeur

Combustion Turbine

CT

Turbine à Combustion

HYDRO

AMÉNAGEMENTS HYDRO-ÉLECTRIQUES

No. N°	Development Amenagement	River Riviere	Owner Propriétaire	Year Installed Année de l'installation		Rated Head ft. Hauteur de chute nominale en pieds	No. of Units Nombre de groupes	Unit Capacity hp. Capacité de chaque groupe en Hp	Total Capacity hp. Capacité globale en Hp	Generators Générateurs	
				First Premier groupe	Latest Dernier groupe					Unit Capacity kw. Capacité de chaque groupe en kw	Total Capacity kw. Capacité globale en kw
1	Bay d'Espoir	Salmon	NPC	1967	1967		4	100,000	400,000	76,500	306,000
2	Twin Falls	Unknown	TFPC	1962	1968	290	5	60,000	300,000	46,800	234,000
3	Deer Lake	Humber	BPC	1925	1930	247	4 3 2	16,000 16,000 29,000	170,000	11,284 11,305 19,950	118,951
4	Grand Falls	Exploits	PPP	1909	1938	109	3 1	2,500 36,000	43,500	1,500 26,000	30,500
5	Menihek	Ashuanipi (Labrador)	IOCC	1954	1960	34 40	2 1	6,000 13,500	25,500	4,250 10,200	18,700
6	Bishops Falls	Exploits	PPP	1909	1952	35	7 2	2,700 1,500	21,900	2,025 1,500	17,175
7	Rattling Brook	Rattling Brook	NLPC	1958	1958	307	2	8,500	17,000	6,375	12,750
8	Mobile	Mobile	NLPC	1951	-	370	1	13,000	13,000	9,350	9,350
9	Watson's Brook	Corner Brook	BPC	1958	1958	559	2	6,000	12,000	4,600	9,200
10	Horse Chops	Horse Chops	NLPC	1953	-	276	1	10,000	10,000	7,650	7,650
11	Tors Cove	Tors Cove	NLPC	1942	1951	173	2 1	2,850 3,500	9,200	2,000 2,500	6,500
12	Cape Broyle	Horse Chops	NLPC	1952	-	176	1	7,600	7,600	6,000	6,000
13	Sandy Brook	Sandy Brook	NLPC	1963	-	115	1	8,000	8,000	5,950	5,950
14	Lookout Brook	Lookout Brook	NLPC	1945	1958	575	2 1	1,850 3,600	7,300	1,400 2,400	5,200
15	Petty Harbour	Petty Harbour	NLPC	1908	1926	190	2 1	2,100 2,750	6,950	1,600 1,800	5,000
16	New Chelsea	New Chelsea Brook	NLPC	1957	-	275	1	5,600	5,600	4,000	4,000
17	Seal Cove	Seal Cove	NLPC	1922	1927	190	1 1	1,500 3,040	4,540	1,200 2,400	3,600
18	Pierres Brook	Pierres Brook	NLPC	1931	-	263	1	4,500	4,500	3,200	3,200
19	Rocky Pond	Tors Cove	NLPC	1943	-	107	1	4,200	4,200	3,200	3,200
20	Lockston	Lockston	NLPC	1956	1961	270	2	2,000	4,000	1,500	3,000
21	Hearts Content	Hearts Content Brook	NLPC	1960	-	150	1	3,600	3,600	2,400	2,400
22	Buchans Brook	Buchans Brook	ASRC	1927	-	163	1	2,359	2,359	1,760	1,760
Total capacity of plants under 1,500 kw. Puissance installée globale des centrales de moins de 1,500 kW									7,490	5,440	
Total capacity of turbines connected directly to mechanical equipment Puissance globale des turbines couplées directement à de l'équipement mécanique									22,000		
Total (all plants) Puissance installée de toutes les centrales									1,110,239	819,526	

THERMAL

AMÉNAGEMENTS THERMO-ÉLECTRIQUES

No. N°	Station Centrale	Location Emplacement	Owner Propriétaire	Year Installed Année de l'installation				Combustible Type of Fuel	Prime Mover Type de moteur	No. Unit	Capacity Capacité kw.	Generators Générateurs					
				First Unit Premier groupe	Latest Unit Dernier groupe	Fuel	Type of Type de					Prime No.	Mower Unit	Capacity Capacité	Total Total		
																Capacity Capacité	kw.
1	St. John's	St. John's	NLPC	1957	1959	b	S	1	10,000	30,000							
2	Salt Pond	Salt Pond	NLPC	1964	1968	b	IC GT	3	1	500 14,400	15,900						
3	Control Centre	Holyrood	NPC	1966	-	a	GT	1	1	14,150	14,150						
4	Grand Falls	Grand Falls	PPP	1930	1931	b	S	2	2	5,000	10,000						
5	Corner Brook	Corner Brook	BPC	1957	-	b	S	1	1	6,600	6,600						
6	Tilt Cove	Tilt Cove	TCPC	1960	-	b	S	1	1	5,000	5,000						
7	Port aux Basques	Port aux Basques	NLPC	1945	1969	b	IC	1 2 3	1 2 3	2,700 350 250							
								1	1	210	4,360						
8	Wabush Lake	Wabush Lake	WM	-	1963	b	IC	4	4	1,000	4,000						
9	Goose Bay	Goose Bay	DOT	1952	1959	b	IC	4 1	4 1	750 1,000	4,000						
10	Labrador City	Carol Lake	IOCC			b					3,910						
11	Palmquist	Gander	DOT	1948	1962	b	IC	3	3	1,000	3,000						
12	Happy Valley	Goose Bay	NLPC	1967	1967	b	IC	2 2	2 2	1,100 250	2,700						
13	St. John's	St. John's	NLPC	1956	-	b	IC	1	1	2,500	2,500						

Total capacity of plants 1,500 kw. and over (not listed above)

4,000

Puissance installée globale des centrales de 1,500 kW et plus (non comprises ci-dessus)

Total capacity of plants under 1,500 kw.

17,327

Puissance installée globale des centrales de moins de 1,500 kW

Total (all plants) Puissance installée de toutes les centrales

127,447

Combined Hydro and Thermal Total

946,973

Puissance Totale Hydro-Électrique et Thermo-Électrique

Gas Turbine

GT

Turbine à Gaz

Internal Combustion

IC

Combustion Interne

Steam

S

Vapeur

Combustion Turbine

CT

Turbine à Combustion

OWNER CODE INDEX

This index provides an explanation of the code letters used in the "Owner" column of the preceding tables. The following abbreviations are used for the names of the provinces and territories of Canada:

British Columbia.....BC	New Brunswick.....NB
Alberta.....Alta	Nova Scotia.....NS
Saskatchewan.....Sask	Prince Edward Island.....PEI
Manitoba.....Man	Newfoundland.....Nfld
Ontario.....Ont	Yukon Territory.....YT
Québec.....Qué	Northwest Territories...NWT

INDEX DES PROPRIÉTAIRES

Cet index donne les sigles employés dans la colonne intitulée "Propriétaire" dans les tableaux qui précèdent. Les noms des provinces et des territoires y sont aussi abrégés comme ci-dessous:

Colombie-Britannique...C.-B.	Nouveau-Brunswick.....N.-B.
Alberta.....Alb.	Nouvelle-Écosse.....N.-É.
Saskatchewan.....Sask.	Île du Prince-Édouard.....Î.P.-É.
Manitoba.....Man.	Terre-Neuve.....T.-N.
Ontario.....Ont.	Yukon.....T. du Y.
Québec.....P.Q.	Territoires du
	Nord-Ouest.....T. du N.-O.

CODE	OWNER	DEVELOPMENTS LOCATED IN
ACC.	American Can of Canada Limited	Ont
ACCL.	Allied Chemical Canada Limited	Ont
ACL.	Anaconda Company (Canada) Limited	BC
ACPP.	Anglo-Canadian Pulp and Paper Mills Limited	Qué
AECL.	Atomic Energy of Canada Limited	Ont
AL.	Ayers Limited	Qué
ALCAN.	Aluminum Company of Canada Limited	BC, Qué
APPC.	Abitibi Power and Paper Company Limited	Ont
ASC.	Algoma Steel Corporation Limited	Ont
ASR.	Atlantic Sugar Refineries	NB
ASRC.	American Smelting and Refining Company Limited	Nfld
BA.	British American Oil Company	Alta
BCFP.	British Columbia Forest Products Limited	BC
BCHPA.	British Columbia Hydro and Power Authority	BC
BCSRC.	British Columbia Sugar Refining Company Limited	BC
BMPC.	Bowaters Mersey Paper Company Limited	NS
BPC.	Bowater Power Company Limited	Nfld
C.	Chemsell (1963) Limited	Alta
CAC.	Cassiar Asbestos Corporation Limited	BC
CB.	Consolidated-Bathurst Limited	NB
CC.	City of Campbellton	NB
CCC.	Columbia Cellulose Company Limited	BC
CCCC.	Continental Can Company of Canada Limited	Ont
CCL.	Canadian Celanese Limited	Qué
CDSC.	Canada and Dominion Sugar Company Limited	Ont, Qué
CE.	City of Edmonton	Alta
CFP.	Canadian Forest Products Limited	BC
CGEC.	Canadian General Electric Company Limited	Ont
CIPC.	Canadian International Paper Company	Qué
CL.	City of Lethbridge	Alta
CM.	Coniagas Mines Limited	Qué
CMH.	City of Medicine Hat	Alta
CMSC.	Cominco Limited	Sask, BC, NWT
CN.	City of Nelson	BC
CNPC.	Canadian Niagara Power Company Limited	Ont
COC.	City of Calgary	Alta
COR.	City of Revelstoke	BC
CP.	Calgary Power Ltd.	Alta
CPUC.	Campbellford Public Utilities Commission	Ont
CRL.	City of Rivière-du-Loup	Qué
CRPC.	Churchill River Power Company	Sask
CS.	City of Sherbrooke	Qué
CSC.	Canada Starch Company Limited	Ont
CSF.	Canadian Sugar Factories Limited	Alta
CTMC.	Canada Tungsten Mining Corporation Limited	NWT
CU.	Canadian Utilities Limited	Alta
CZB.	Crown Zellerbach Building Materials Limited	BC
CZC.	Crown Zellerbach Canada Limited	BC
DOSCO.	Dominion Iron and Steel Company Limited	NS
DOT.	Department of Transport, Government of Canada	Nfld
DP.	Donnacona Paper Company	Qué
DPC.	Dryden Paper Company Limited	Ont
DPP.	Domtar Pulp and Paper Company Limited	Qué
DPW.	Department of Public Works, Government of Canada	Man., Ont
DPWA.	Department of Public Works, Government of Alberta	Alta

SIGLE	PROPRIÉTAIRE	EMPLACEMENT DES AMÉNAGEMENTS
ACC.	American Can of Canada Limited.	Ont.
ACCL.	Allied Chemical Canada Limited.	Ont.
ACL.	Anaconda Company (Canada) Limited	C.-B.
ACPP.	Anglo-Canadian Pulp and Paper Mills Limited	P. Q.
AECL.	Atomic Energy of Canada Limited	Ont.
AL.	Ayers Limited	P. Q.
ALCAN.	Aluminium du Canada Ltée.	C.B., P. Q.
APPC.	Abitibi Power and Paper Company Limited	Ont.
ASC.	Algoma Steel Corporation Limited.	Ont.
ASR.	Atlantic Sugar Refineries	N.-B.
ASRC.	American Smelting and Refining Company Limited.	T.-N.
BA.	British American Oil Company.	Alb.
BCFP.	British Columbia Forest Products Limited.	C.-B.
BCHPA.	British Columbia Hydro and Power Authority.	C.-B.
BCSRC.	British Columbia Sugar Refining Company Limited	C.-B.
BMPC.	Bowaters Mersey Paper Company Limited	N.-E.
BPC.	Bowater Power Company Limited	T.-N.
C.	Chemsell (1963) Limited	Alb.
CAC.	Cassiar Asbestos Corporation Limited.	C.-B.
CB.	Consolidated-Bathurst Limited	N.-B.
CC.	Ville de Campbellton	N.-B.
CCC.	Columbia Cellulose Company Limited.	C.-B.
CCCC.	Continental Can Company of Canada Limited	Ont.
CCL.	Canadian Celanese Limited	P. Q.
CDSC.	Canada and Dominion Sugar Company Limited	Ont. P. Q.
CENC.	Commission d'Energie du Nord Canadien	T. du Y., T. du N.-O.
CFP.	Canadian Forest Products Limited.	C.-B.
CGEC.	Canadian General Electric Company Limited	Ont.
CHEQ.	Commission hydroélectrique de Québec.	P. Q.
CIPC.	Canadian International Paper Company.	P. Q.
CL.	Ville de Lethbridge	Alb.
CM.	Coniagas Mines Limited.	P.-Q.
CMH.	Ville de Medicine Hat	Alb.
CMSC.	Cominco Limited	Sask., C.-B., T. du N.-O.
CN.	Ville de Nelson	C.-B.
CNPC.	Canadian Niagara Power Company Limited.	Ont.
COC.	Ville de Calgary.	Alb.
COR.	Ville de Revelstoke	C.-B.
CP.	Calgary Power Ltd.	Alb.
CPNC.	Conseil des ports nationaux, Gouvernement du Canada	Man.
CPUC.	Campbellford Public Utilities Commission.	Ont.
CRPC.	Churchill River Power Company	Sask.
CSC.	Canada Starch Company Limited	Ont.
CSF.	Canadian Sugar Factories Limited.	Alb.
CTMC.	Canada Tungsten Mining Corporation Limited.	T. du N.-O.
CU.	Canadian Utilities Limited.	Alb.
CZB.	Crown Zellerbach Building Materials Limited	C.-B.
CZC.	Crown Zellerbach Canada Limited	C.-B.
DOSCO.	Dominion Iron and Steel Company Limited	N.-E.
DOT.	Ministère des Transports, Gouvernement du Canada.	T.-N.
DP.	Donnacona Paper Company	P. Q.
DPC.	Dryden Paper Company Limited.	Ont.
DPP.	Domtar Pulp and Paper Company Limited	P. Q.
DPW.	Ministère des Travaux publics, Gouvernement du Canada	Ont., Man.
DPWA.	Ministère des Travaux publics, Province de l'Alberta	Alb.

CODE	OWNER	DEVELOPMENTS LOCATED IN
EBEC	E. B. Eddy Company	Ont, Qué
EFC.	Elk Falls Company Limited.	BC
ELS.	Eagle Lake Sawmills Company Limited.	BC
EM	Endako Mines Limited	BC
EMR.	Eldorado Mining and Refining Limited	NWT, Sask
EN	Eldorado Nuclear Limited	Sask
ERC.	Electric Reduction Company	Qué
FC	Fraser Companies Limited	NB
FMCC	Ford Motor Company of Canada Limited	Ont
GCM.	Gaspé Copper Mines Limited	Qué
GCOS	Great Canadian Oil Sands Limited	Alta
GELW	Gananoque Electric Light and Water Supply Co. Ltd.	Ont
GLPAC.	Great Lakes Paper Company.	Ont
GLPC	Great Lakes Power Corporation Limited.	Ont
GM	Granduc Mines Limited.	BC
GPC.	Gulf Power Company	Qué
GPP.	Gaspesia Pulp and Paper Company Limited.	Qué
GTR.	Goodyear Tire and Rubber Company Limited	Ont
HBMS	Hudson Bay Mining and Smelting Company Limited	Sask
HCL.	Huronian Company Limited	Ont
HEPCO.	Hydro-Electric Commission of Ontario	Ont
HJP.	Hart Jaune Power Company	Qué
HLC.	Hillcrest Lumber Company Limited	BC
HQ	Quebec Hydro-Electric Commission	Qué.
HSL.	Hazelton Sawmills Limited.	BC
HWS.	Hiram Walker and Sons Limited.	Ont
INCO	International Nickel Company of Canada Limited	Man
IOC.	Imperial Oil Limited	NS
IOCC	Iron Ore Company of Canada	Qué, Nfld
IPP.	Irving Pulp and Paper Limited.	NB
JIOC	Jedway Iron Ore Company Limited.	BC
JMC.	James MacLaren Company Limited	Qué
KC	Kalium Chemicals Limited	Sask
KHFP	Kicking Horse Forest Products Limited.	BC
KVPC	Kalamazoo Vegetable Parchment Company Limited.	Ont
LMC.	Lorraine Mining Company Limited.	Qué
MBPP	Minas Basin Pulp and Power Company	NS
MBPR	MacMillan Bloedel and Powell River Limited	BC
ME	Municipality of Edmundston	NB
MEC.	Maritime Electric Company Limited.	PEI
MFLC	McFadden Lumber Co. (Domtar)	Ont
MI	Manitoba Hydro	Man
MJ	Municipality of Jonquiére.	Qué
MNBP	Main and New Brunswick Electrical Power Co. Ltd.	NB
MP	Manicouagan Power Company.	Qué
MQPC	MacLaren-Québec Power Company.	Qué
MS	Municipality of Summerside	PEI
MSC.	Manitoba Sugar Company Limited	Man

SIGLE	PROPRIÉTAIRE	EMPLACEMENT DES AMÉNAGEMENTS
EBEC	E.B. Eddy Company	Ont., P. Q.
EFC.	Elk Falls Company Limited	C.-B.
ELS.	Eagle Lake Sawmills Company Limited	C.-B.
EM	Endako Mines Limited.	C.-B.
EMR.	Eldorado Mining and Refining Limited.	T. du N.-O., Sask.
EN	Eldorado Nuclear Limited.	Sask.
ERC.	Electric Reduction Company.	P. Q.
FC	Fraser Companies Limited	N.-B.
FMCC	Ford Motor Company of Canada Limited	Ont.
GCM.	Gaspé Copper Mines Limited	P. Q.
GCOS	Great Canadian Oil Sands Limited	Alb.
GELW	Gananoque Electric Light and Water Supply Co. Ltd.	Ont.
GLPAC.	Great Lakes Paper Company.	Ont.
GLPC	Great Lakes Power Corporation Limited.	Ont.
GM	Granduc Mines Limited.	C.-B.
GPC.	Gulf Power Company	P. Q.
GPP.	Gaspesia Pulp and Paper Company Limited.	P. Q.
GTR.	Goodyear Tire and Rubber Company Limited	Ont.
HBMS	Hudson Bay Mining and Smelting Company Limited	Sask.
HCL.	Huronian Company Limited	Ont.
HEPCO.	Hydro-Electric Power Commission of Ontario	Ont.
HJP.	Hart Jaune Power Company	P. Q.
HLC.	Hillcrest Lumber Company Limited	C.-B.
HQ	Commission hydroélectrique de Québec	P. Q.
HSL.	Hazelton Sawmills Limited.	C.-B.
HWS.	Hiram Walker and Sons Limited.	Ont.
INCO	International Nickel Company of Canada Limited	Man.
IOC.	Imperial Oil Limited	N.-E.
IOCC.	Iron Ore Company of Canada	P. Q., T.-N.
IPP.	Irving Pulp and Paper Limited.	N.-B.
JIOC	Jedway Iron Ore Company Limited.	C.-B.
JMC.	James MacLaren Company Limited	P. Q.
KC	Kalium Chemicals Limited	Sask.
KHFP	Kicking Horse Forest Products Limited.	B. C.
KVPC	Kalamazoo Vegetable Parchment Company Limited.	Ont.
LMC.	Lorraine Mining Company Limited.	P. Q.
MBPP	Minas Basin Pulp and Power Company	N.-E.
MBPR	MacMillan Bloedel and Powell River Limited	C.-B.
ME	Municipalité d'Edmundston.	N.-B.
MEC.	Maritime Electric Company Limited.	I. P.-E.
MFLC	McFadden Lumber Company (Domtar)	Ont.
MH	Manitoba Hydro	Man.
MJ	Municipalité de Jonquière.	P. Q.
MNBP	Maine and New Brunswick Electric Power Co. Ltd.	N.-B.
MP	Manicouagan Power Company.	P. Q.
MQPC	MacLaren-Québec Power Company.	P. Q.
MS	Municipalité de Summerside	I. P.-E.

CODE	OWNER	DEVELOPMENTS LOCATED IN
NBEPC.	New Brunswick Electric Power Commission.	NB
NBIPC.	New Brunswick International Paper Company Limited.	NB
NCPC.	Northern Canada Power Commission	YT, NWT
NHB.	National Harbours Board, Government of Canada.	Man
NLPC.	Newfoundland Light and Power Co. Limited	Nfld
NM.	Noranda Mines Limited.	Qué
NP.	Northwood Pulp Company	BC
NPC.	Newfoundland and Labrador Power Commission	Nfld
NSLPC.	Nova Scotia Light and Power Company Limited.	NS
NSP.	Nova Scotia Pulp Limited	NS
NSPC.	Nova Scotia Power Commission	NS
NU.	Northland Utilities Limited.	Alta
NWPP.	North Western Pulp and Power Limited	Alta
OFM.	Ogilvie Flour Mills.	Qué
OHEC.	Ottawa Hydro-Electric Commission	Ont
OMPP.	Ontario-Minnesota Pulp and Paper Company Limited	Ont
OPC.	Ontario Paper Company.	Ont
OVPC.	Ottawa Valley Power Company.	Qué
OWLP.	Orillia Water Light and Power Commission	Ont
PAPC.	Pan American Petroleum Corporation	Alta
PAPUC.	Port Arthur Public Utilities Commission.	Ont
PCL.	Price Company Limited.	Qué
PC.	Polymer Corporation.	Ont
PELC.	Pembroke Electric Light Company Limited.	Qué, Ont
PHPC.	Peterborough Hydraulic Power Company	Ont
PP.	Pacific Petroleum Company Limited (now West Coast Trans- mission Company)	BC
PPP.	Price (Nfld) Pulp and Paper Limited.	Nfld.
QCMC.	Québec Cartier Mining Company.	Qué
QHEC.	Québec Hydro-Electric Commission	Qué
QNSPC.	Québec-North Shore Paper Company	Qué
RC.	Rayonier Canada (BC) Limited	BC
REC.	Romaine Electric Company Limited	Qué
SAPC.	Saguenay Power Company	Qué
SCC.	Steel Company of Canada Limited.	Ont
SFPPC.	Spruce Falls Power and Paper Company	Ont
SGM.	Sheritt-Gordon Mines Limited.	Man, Alta
SMP.	Scott Maritimes Pulp Limited	NS
SMP.	Smelter Power Corporation.	Qué
SMS.	S. M. Simpson Limited.	BC
SP.	Strathcona Paper Company Limited	Ont
SPC.	Saskatchewan Power Corporation	Sask
STLSA.	St. Lawrence Seaway Authority.	Ont
TCL.	Tahsis Company Limited	BC
TCPC.	Tilt Cove Power Corporation.	Nfld
TFPC.	Twin Falls Corporation Limited	Nfld
TPPC.	Thurso Pulp and Paper Company.	Qué

SIGLE	PROPRIÉTAIRE	EMPLACEMENT DES AMÉNAGEMENTS
MSC.	Manitoba Sugar Company Limited	Man.
MTC.	Ministère des Transports, Gouvernement du Canada	T.-N.
MTP.	Ministère des Travaux publics, Gouvernement du Canada	Ont., Man.
MTPA	Ministère des Travaux publics, Province de l'Alberta	Alb.
NBEP.	New Brunswick Electric Power Commission	N.-B.
NBIPC.	New Brunswick International Paper Company Limited	N.-B.
NCPC.	Commission d'Energie du Nord Canadien	T. du Y., T. du N.-O.
NHB.	Conseil des ports nationaux, Gouvernement du Canada	Man.
NLPC.	Newfoundland Light and Power Company Limited	T.-N.
NM	Noranda Mines Limited	P. Q.
NP	Northwood Pulp Company	C.-B.
NPC.	Newfoundland and Labrador Power Commission	T.-N.
NSLPC.	Nova Scotia Light and Power Company Limited	N.-E.
NSP.	Nova Scotia Pulp Limited	N.-E.
NSPC	Nova Scotia Power Commission	N.-E.
NU	Northland Utilities Limited	Alb.
NWPP	North Western Pulp and Power Limited	Alb.
OEM.	Ogilvie Flour Mills	P. Q.
OHEC	Ottawa Hydro Electric Commission	Ont.
OMPP	Ontario-Minnesota Pulp and Paper Company Limited	Ont.
OPC.	Ontario Paper Company	Ont.
OVPC	Ottawa Valley Power Company	P. Q.
OWL.	Orillia Water Light and Power Commission	Ont.
PAPC	Pan American Petroleum Corporation	Alb.
PAPUC.	Port Arthur Public Utilities Commission	Ont.
PCL.	Price Company Limited	P. Q.
PC	Polymer Corporation	Ont.
PELC	Pembroke Electric Light Company Limited	P. Q., Ont.
PHPC	Peterborough Hydraulic Power Company	Ont.
PP	Pacific Petroleum Company Limited (now West Coast Trans- mission Company)	C.-B.
PPP.	Price (Nfld) Pulp and Paper Limited	T.-N.
QCMC	Québec Cartier Mining Company	P. Q.
QNSPC.	Québec-North Shore Paper Company	P. Q.
RC.	Rayonier Canada (BC) Limited	C.-B.
REC.	Romaine Electric Company Limited	P. Q.
SAPC	Saguenay Power Company	P. Q.
SCC.	Steel Company of Canada Limited	Ont.
SFPPC.	Spruce Falls Power and Paper Company	Ont.
SGM.	Sheritt-Gordon Mines Limited	Man., Alb.
SMP.	Scott Maritimes Pulp Limited	N.-E.
SMPC	Smelter Power Corporation	P. Q.
SMS.	S. M. Simpson Limited	C.-B.
SP	Strathcona Paper Company Limited	Ont.
SPC.	Saskatchewan Power Corporation	Sask.
STLSA.	St. Lawrence Seaway Authority	Ont.
TCL.	Tahsis Company Limited	C.-B.
TCPC	Tilt Cove Power Corporation	T.-N.
TFPC	Twin Falls Power Company Limited	T.-N.
TPPC	Thurso Pulp and Paper Company	P. Q.

CODE	OWNER	DEVELOPMENTS LOCATED IN
VRL.	City of Rivière-du-Loup	Qué.
VS	City of Sherbrooke	Qué.
WC	Western Chemicals Limited.	Alta
WCL.	Weldwood of Canada Limited	BC
WCPC	West Coast Power Company Limited	Nfld
WFI.	Western Forest Industries Limited.	BC
WFM.	Wesfrob Mines Limited.	BC
WH.	Winnipeg Hydro	Man
WKPL	West Kootenay Power and Light Company Limited.	BC
WM	Western Mines Limited.	BC
WML.	Wabush Mines Limited	Nfld
YEC.	Yukon Electrical Company Limited	YT
ZIM.	Zeballos Iron Mines Limited.	BC

SIGLE	PROPRIÉTAIRE	EMPLACEMENT DES AMÉNAGEMENTS
VC	Ville de Campbellton	N.-B.
VDC.	Ville de Calgary	Alb.
VE	Ville d'Edmonton	Alb.
VL	Ville de Lethbridge.	Alb.
VMI.	Ville de Medicine Hat.	Alb.
VN	Ville de Nelson.	C.-B.
VRE.	Ville de Revelstoke.	C.-B.
VRL.	Ville de Rivière-du-Loup	P. Q.
VS	Ville de Sherbrooke.	P. Q.
WC.	Western Chemicals Limited.	Alb.
WCL.	Weldwood of Canada Limited	C.-B.
WPC.	West Coast Power Company Limited	T.-N.
WFI	Western Forest Industries Limited.	C.-B.
WFM	Wesfrob Mines Limited.	C.-B.
WH.	Winnipeg Hydro	Man.
WKPL.	West Kootenay Power and Light Company Limited.	C.-B.
WM.	Western Mines Limited.	C.-B.
WML	Wabush Mines Limited	T.-N.
YEC	Yukon Electrical Company Limited	T. du Y.
ZIM	Zeballos Iron Mines Limited.	C.-B.



LEGEND

TRANSMISSION LINES	
EXISTING	UNDER CONSTRUCTION
65 KV - 199 KV	---
200 KV - 299 KV	---
300 KV - 399 KV	---
400 KV AND OVER	---

GENERATING STATIONS

HYDRO-ELECTRIC	△
THERMAL-ELECTRIC	●

NOTE: ONLY STATIONS WITH TOTAL INSTALLED GENERATING CAPACITIES OF NOT LESS THAN 1500 KW ARE SHOWN

DEPARTMENT OF ENERGY, MINES AND RESOURCES
ENERGY DEVELOPMENT SECTOR

CANADA

MAIN ELECTRIC TRANSMISSION SYSTEMS
AND
PRINCIPAL POWER GENERATING STATIONS

SCALE OF MILES

STATUTE MILES	0	50	100	150	200	250	300
KILOMETRES	0	80	160	240	320	400	480

DECEMBER 1969

LÉGENDE

LIGNES DE TRANSPORT D'ÉNERGIE

EXISTANTES	65 kV 199 kV	EN VOIE DE CONSTRUCTION
—	250 kV 289 kV	—
—	300 kV 399 kV	—
—	800 kV OU PLUS	—

CENTRALES

HYDRO-ÉLECTRIQUE ○

THERMO-ÉLECTRIQUE ▲

NOTA: SEULES LES CENTRALES DONT LA PUISSANCE GLOBALE INSTALLÉE EST DE 1500kW AU MINIMUM, SONT INDICUÉES.



MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES
SECTEUR DE L'EXPLOITATION DE L'ÉNERGIE

CANADA

PRINCIPAUX RÉSEAUX DE TRANSPORT
D'ÉNERGIE ÉLECTRIQUE
ET PRINCIPALES CENTRALES

ECHELLE EN MILES
0 100 200 300 400 500 600 700 800 900 1000

ECHELLE EN KILOMÈTRES
0 100 200 300 400 500 600 700 800 900 1000

DÉCEMBRE 1969

Energy Development
DEPARTMENT OF ENERGY, MINES AND RESOURCES
OTTAWA, CANADA

Secteur de l'exploitation de l'énergie
MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES
OTTAWA, CANADA

AUG 13 1986

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